

Main news of the REFLEXW version 9.0/9.1 from 12.07.2019

0. General

If the main windows will be minimized it is possible to maximize them again using the corresponding button within the main menu.

1. Global settings:

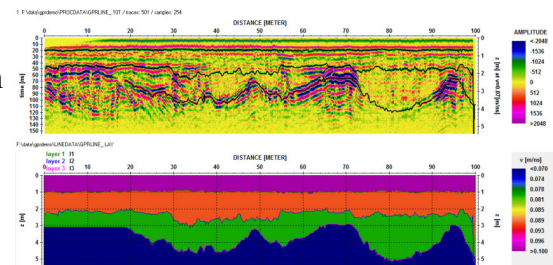
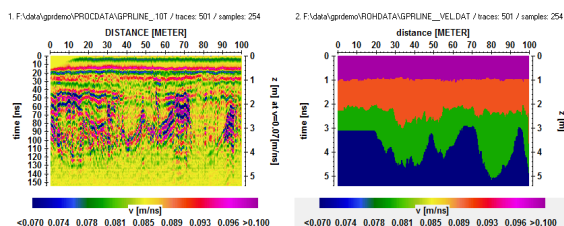
new option **GPS Map API key**. The GPS Map uses an API key. Here you may enter a new API key if the old one is not available any more.

New option double check filefilter - if activated the filefilter for the next/prev. buttons within the 2D-dataanalysis will be double checked.

I. 2D-dataanalysis

view color bars: a **second color bar** will be displayed for:

- 2 or more datafiles have been loaded with the plotoption always each file activated
- layershow with activated option fill layer/with velocities



If secondary color bars are displayed they will be located below the profiles if horizontal split mode has been activated.

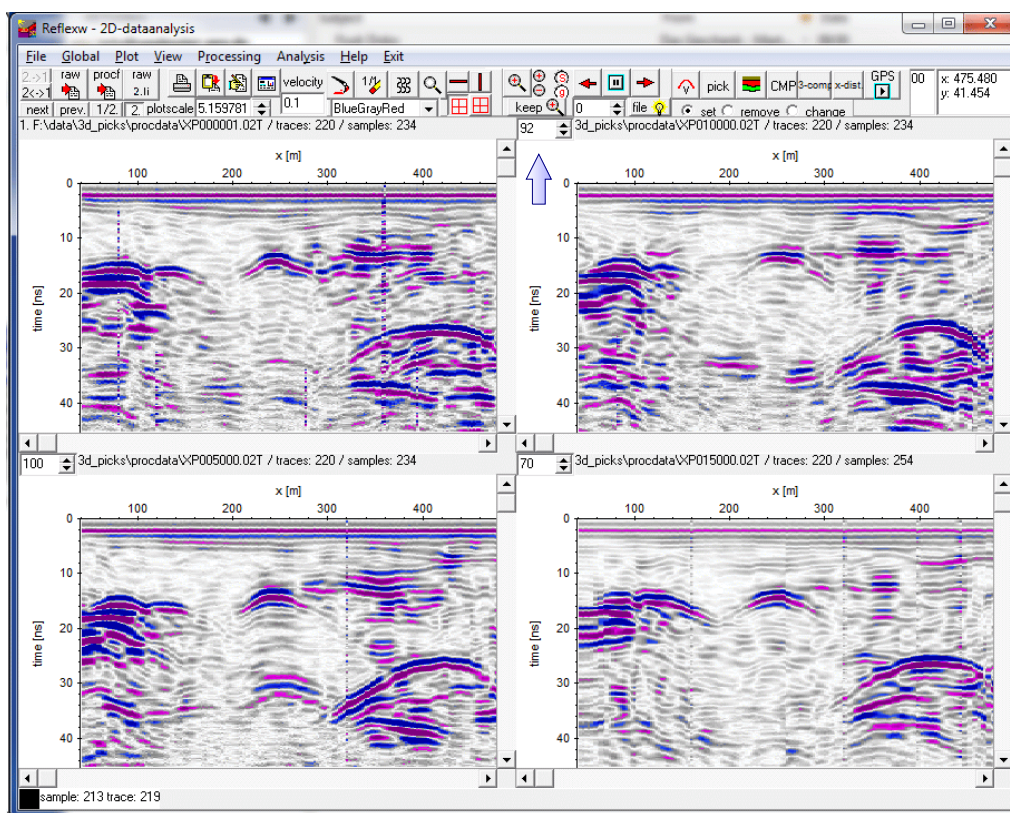
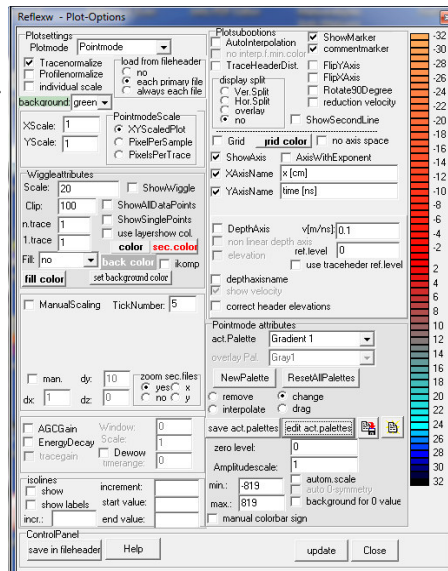
The actual scroll position of the primay file (mid position of the screen) will be displayed within the lowermost panel.

1.plot options

New option **background for 0 value** within the plotoptions menu. If activated all zero values will be plotted using the background color.

New option **no axis space**: if activated no spaces will be used for the axis display.

New plotoption **individual scale**. If activated new pointmode scaling factors for the secondary windows may be used by entering a percentage value. The options for the scaling factors are located within the upper left corner of each secondary profile. The option may be useful if profiles exhibit different energy distributions.

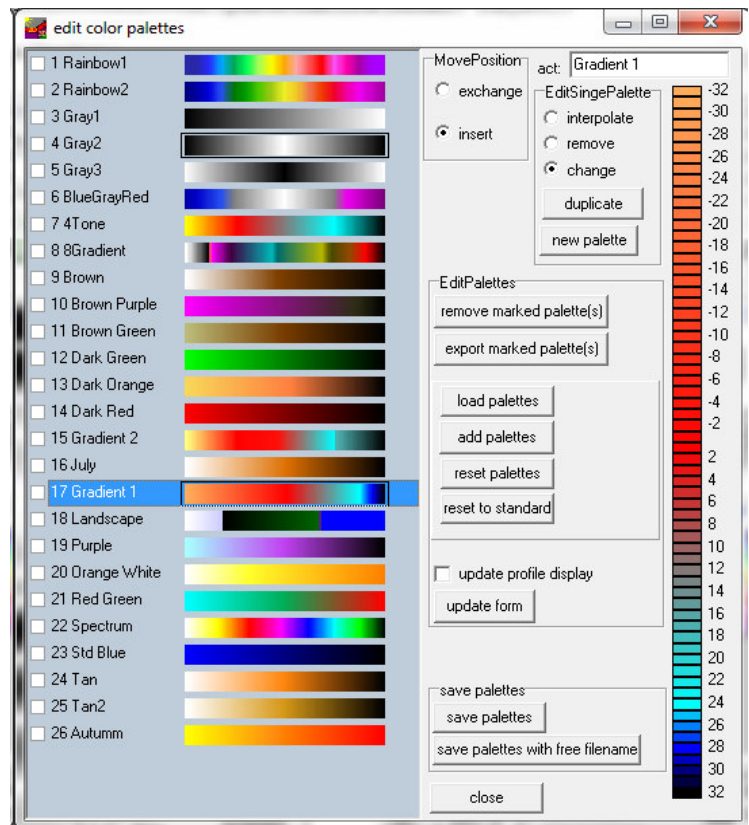


new option **edit act.palettes** (from ver. 9.1): opens a new window named **edit color palettes menu** which allows to edit the actual color palettes.

When opening the edit color palettes menu the actual palettes are displayed within the left panel. Here you can activate one palette by clicking on it. With the option **update profile display** the actually loaded line will be displayed using the new palette. Activating the option **update form** updates the display of the edit color palettes menu.

The **order** of the palettes may be simply modified by tracking one palette with pressed mouse key. The option **MovPosition** controls therepositioning. With **insert** activated the palette will be positioned at the new place and all other palettes will be moved accordingly. With **exchange** activated the position of only two palettes will be changed. The activated one will be placed at the new position whereby the exchanged palette will be placed at the old position of the actual palette.

Within the **EditSinglePalette** groupbox the actual palette may be changed. **Duplicate** allows to duplicate the palette in order to make changes afterwards. The option **new palette**



allows to create a completely new palette. Choose 16 different colors from the color dialogue menu. Between these 16 colors a linear interpolation is automatically done in order to define the 128 different colors. After having entered the colors the name of the palette is queried and the palette will be attached at the end.

The three options **interpolate**, **remove** and **change** allow to edit the actual palette. With **interpolate** activated you may interpolate the colors between two choosable colors. Click on the two colors in the color bar using the left mouse key. After having chosen the second color, the in-between colors are linearly interpolated. With the option **remove** activated you may remove any color by clicking on the corresponding color using the left mouse key. With the option **change** activated you may change any color by clicking on the corresponding color using the left mouse key. The new color must be defined in the opened color dialogue menu.

The groupbox **EditPalette** may be used for editing a complete color palette group. The individual color palettes may be marked within the field at the right side of each palette. The marked palettes may be removed (option **remove marker palette(s)** - or exported to a new file - option **export marked palettes(s)**).

The option **load palettes** allows to read the palettes from any existing palette file (extension *.fil). All existing palettes will be removed.

The option **add palettes** allows to add palettes from any existing palette file (extension *.fil). These new palettes will be placed behind the last actual palette.

The option **reset palettes** removes all existing palettes and reads the palettes from the file palette.fil.

The option **reset to standard** only keeps the internal standard palettes and removes all other ones.

Within the **save palettes** groupbox the actual palettes may be saved under the filename palette.fil (option **save palettes**) or under a free filename (option **save palettes with free filename**).

2. Dataprocessing:

64 bit processing is supported for some memory intensive processing steps like fk migration (Stolt), fd-migration, prestack migration, 3D-fk migration, 3D-diffraction stack, 3D-Kirchh. migration and 3D-Kirchh. 2D-vel..

option **bandpassfrequency**: new suboption **zero padding** - if activated zeros will be automatically included during the bandpassfiltering in order to prevent aliasing in time domain. The option might be useful if a strong first arrival is visible.

option **expand**: new suboption **keep 0 value(0,1)** - if set to 0 the interpolation will be restricted to non 0 values. This might be useful for example for an expanding of a tomographic result.

Option **merge**: new suboption **stack profiles** - allows to vertically stack the chosen lines.

Option **markerinterpol** (from version 9.0.5): With the option **first trace fix** and/or **last trace fix** activated the range before the first and after the last marker will be assumed to have the same scale as the range between the first and second marker as well as the last and second to last marker. The markerincrement within these two ranges will be determined automatically from the entered markerincrements and the scale of the two ranges. Activating these options is useful if the profiles have arbitrary start and end points but special first and last marker positions. These options are also used for the sequence processing.

New option **data fusion** under processing fk-analysis/data-fusion:

The option allows the fusion of a dual frequency data acquisition. The two datasets of different signal frequencies must have been acquired using the same tracincrement and the same start and end-coordinate. The two datafiles must have the same filename except the channel number.

Normally the channel number is given within the last place of the filename:

BAS__007_00.DAT and BAS__007_01.DAT

Exception for IDS-data: Here the channel number is given within the fourth place of the filename:

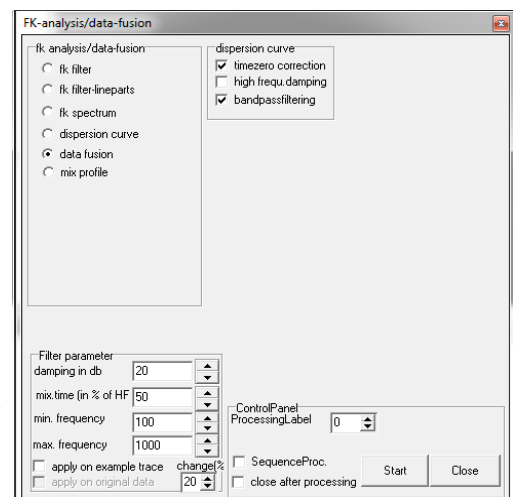
LA010001.DAT and LA020001.DAT

The first channel must be chosen.

The data must be time zero corrected. This can be done automatically within this processing step if the option **timezero correction** has been activated. The method uses the processing option correct max.phase with the suboptions first onsets, zero cross., use mean, auto correct and a threshold of 20 % of the max. amplitude. A possible DC-shift or low frequency dewow must have been removed before.

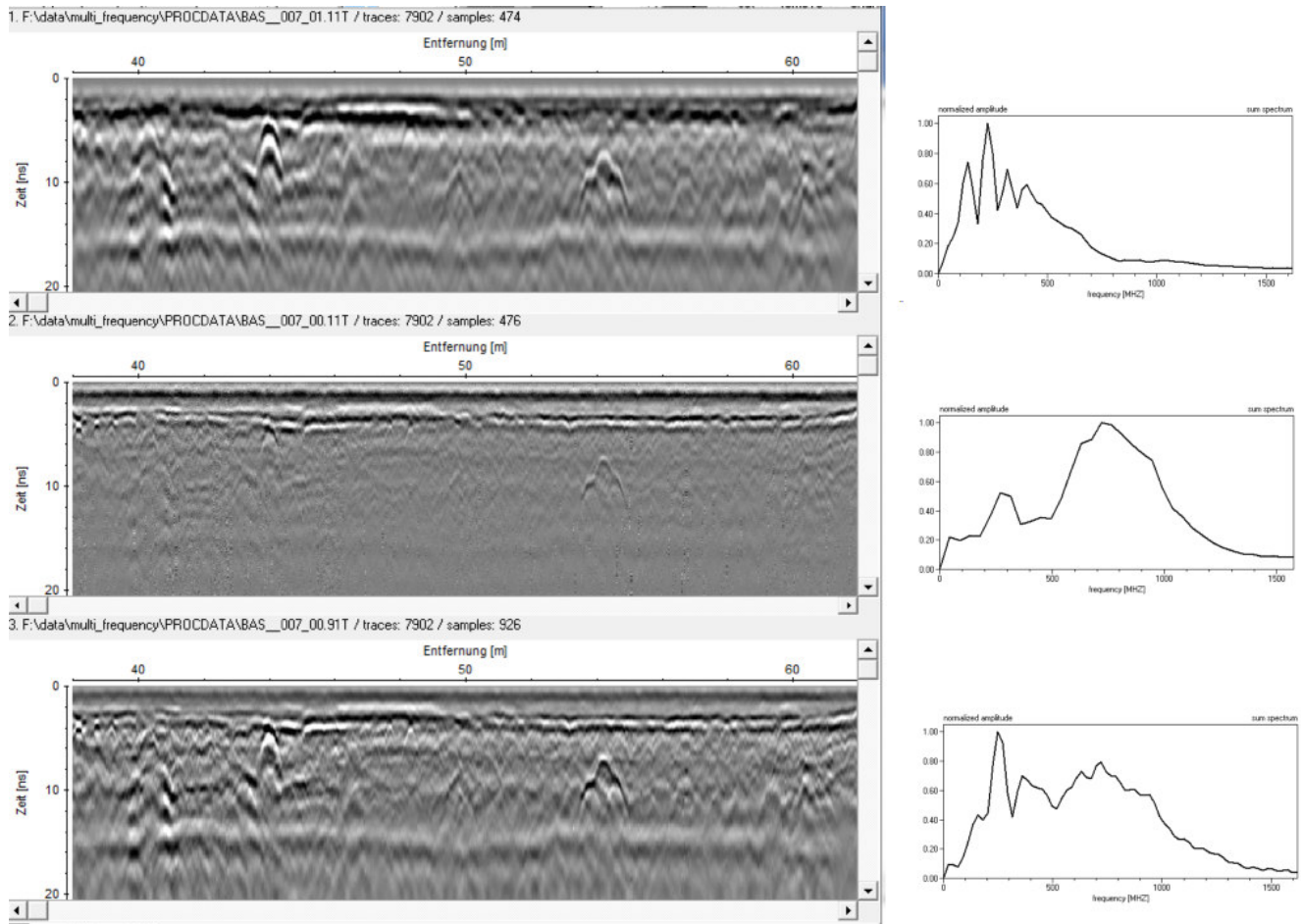
A mixing time must be entered in terms of the percentage of the measured time of the high frequency (HF) data (**option mix.time/in % of HF**). The low frequency data will be damped until this mixing time starting with a value given by **damping in db** at time 0 using a linear interpolation. If the option **high freq.damping** is activated the high frequency data will also be damped starting at the mixing time and ending at the HF measured time again using a linear interpolation and using the damping in db at the HF measured time.

Optionally a **bandpassfiltering** will be done using the **min./max. frequency** parameters. Such a filtering is recommended because the mixing normally introduces some high frequency noise which should be removed using a low pass filtering.



The option may be used within the sequence processing but the option data fusion must stand at the first place within the processing flow. This is necessary because the option fuses two different datasets into one and therefore only subsequent dataprocessing steps (e.g. background removal, migration) are allowed.

The following picture shows an example of a two frequency acquisition. The upper picture shows the lower frequency data, the middle the high frequency and the lower picture the fused data always together with the spectra.



Option **mix profile** now under processing fk-analysis/data-fusion. New option **working range** for add and subtract. The mixing will be done either within time or frequency range.

New option **texture attribute** under processing/complex trace analysis. The option extracts textural features using a co-occurrence matrix depicting spatial relations or patterns of neighboring amplitudes. First the data are transformed into gray level whereby the total number of gray levels is given by **nr. gray levels**. Then a co-occurrence matrix is built for a texture element of given size (**size in traces** and **size in samples**) at each position (moving window). The size in samples should cover approximately one period and will be automatically used as default value if given within the fileheader. A useful value for the size in traces is around 10.

Four possible directions (**horizontal, vertical, 45 degree** and **135 degree**) may be used for creating the co-occurrence matrix. Horizontal for example means that the neighboring grey levels at the right are summed up for the matrix building.

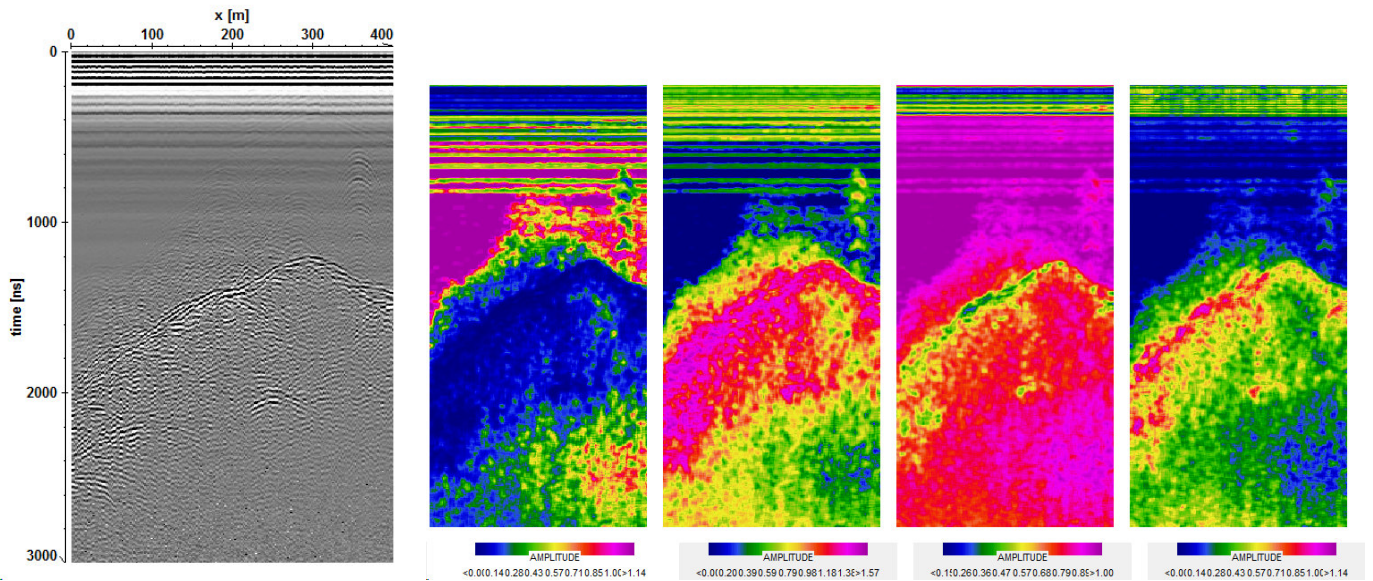
Four different texture attributes may be calculated:

uniformity: it reflects the overall uniformity (homogeneity) of the gray level distribution. Sometimes it is also named energy.

entropy: it is a measure of the overall uncertainty (randomness)

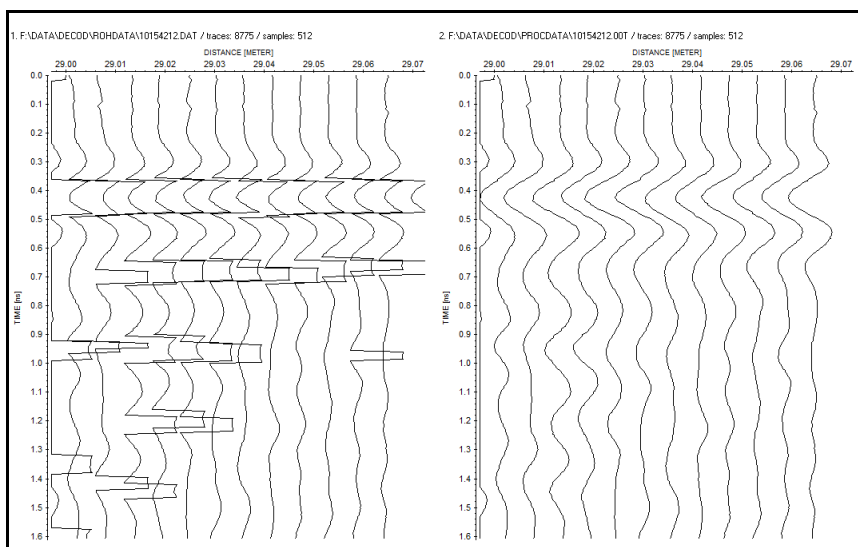
local homogeneity: it is a measure of the local homogeneity

local dissimilarity: it is used to detect the local dissimilarity (contrast)



The right picture shows the four texture attributes (from left to right) uniformity, entropy, local homogeneity, local dissimilarity for the dataset shown within the left picture.

New option **unwrapping** under processing/declipping. The filter enables an unwrapping for all values showing a wrapping due to an insufficient data representation.



Option **moving window spectrum**: new option **frequency resampling** which allows to enter a factor for the resampling of the resulting frequency axis. Enter a greater factor than 1 if the frequency axis is undersampled.

2.1 Sequence processing:

New option **only every 2. Line** - if activated the processing will be restricted to every second chosen line starting with the first chosen line. This option might be useful for example if each second line shall be flipped. This option simplifies the file choice process which is quite expensive for every second line if the filenaming is in ascending order.

3. View:

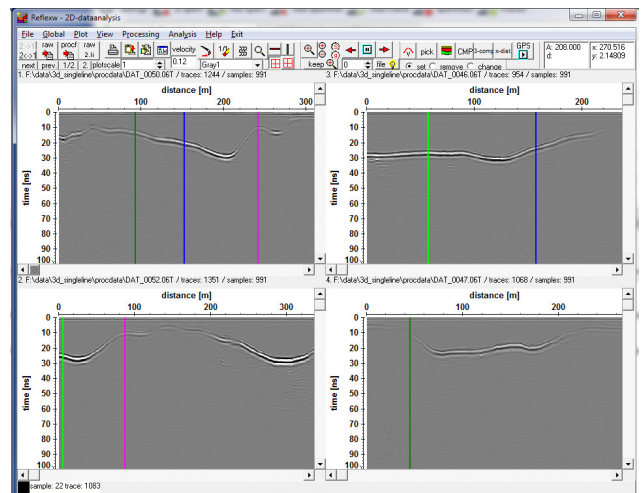
Profile sum spectrum/histogram: new option **sec.profile** - if activated the spectra of the secondary profiles will be shown in addition (blue 2. line, green 3. line, yellow 4. line). With the option **normalize** activated the spectra of the secondary lines are normalized to the spectrum of the primary profile.

New option **normalize** within the FrequencyGroupBox. If activated the frequency spectrum will be normalized to 1.

New option **ascii** within histogram/sum trace which allows to save the actual histogram/sum trace on an ASCII-file.

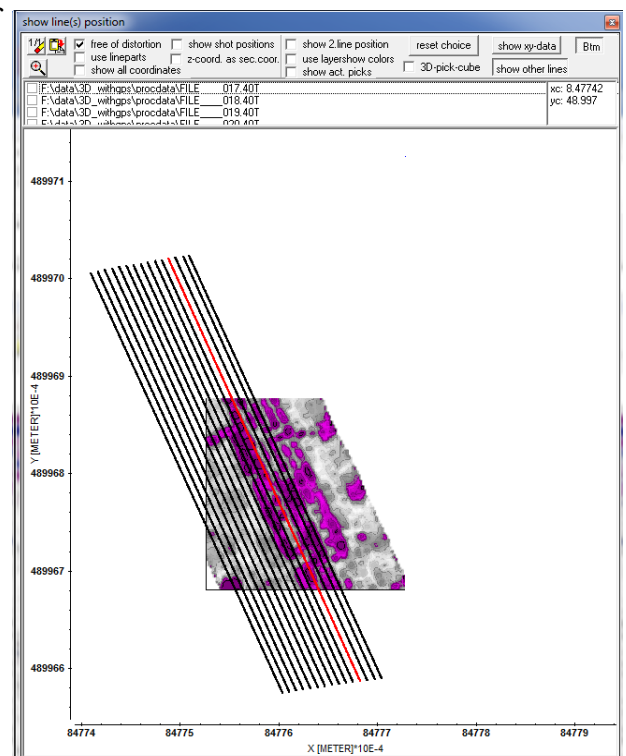
Core data/1D-models: now several core data files may be loaded.

crossingpoints: new option which allows to display the location of the crossing points of the actually loaded lines. The layershow colors are used in order to assign the related crossing points. The parameter **corr.xy-coord bin(%)** under global settings (chap. 1.2.1) controls the size of the crossing bin together with the traceincrement. Increase this parameter if no crossing points are found although the lines are really crossing.



profile line (trace header coord.): new option **btm** - if activated a bitmap (also georeferenced with a tfw file) will be plotted as a background

New option **show filenames** - if activated the filenames of the lines are displayed.



Gps map: allows to view the profile lines within a Google Map. The GPS Map uses an API key. The API key is normally provided by us. if the old one is not available any more you may enter a new one within the global settings menu (option **GPS Map API key**).



The option **UTMToDegree** allows to convert UTM-coordinates to degree values based on a given utm zone. The option latitude defines where the latitude coordinates have been stored within the traceheaders (x- or y-position).

The **color** and the **width** of the lines may be adapted. The display of the profile line may be disabled by setting polygon width to 0. This might be useful for example if the pick display (see below) is hidden by the line.

Activating the option **show filenames** displays the start and end point and the filename. Activating the option **show line position** allows to continuously show the actual mouse position by a red circle when dragging over the line. The option **show 2. line position** displays the xy-position of the secondary file using the same distance coordinate. The option **show other lines** allows to show the xy-locations of other profiles. The option **reset choice** resets this display of the other profiles. With the option **show shot positions** activated the shot positions stored within the traceheaders are displayed in addition in green (blue for 2.line) color. **Zooming** and **copy to clipboard** possibilities are included. Activating the option **use layershow colors** uses the predefined layershow colors for the display of the lines. The option **1/1** resets and centers the display.

The display will also be automatically centered when using the zoom-option or when scrolling through the zoomed profile. The actual profile center will be displayed by a red circle.

With the option **no polygons** activated the polygon symbols (e.g. the circle indicating the position of the current mouse) will be hidden. Activating the option enables the option use bitmap.

Activating the option **use bitmap** generates an internal bitmap copy of the gps map which is useful under some circumstances for viewing the picks or for viewing the actual line position. For example the actual line position will not be displayed for a very large file. In this case use bitmap must be activated which allows the view. The option is only enabled if no polygons is activated.

The actual **picks** may be displayed (option **show**) using a red-green-blue color scheme for the icons with red corresponding to the smallest traveltime values and blue to the largest traveltime values. The parameter **max. picks** controls the max. picks to be displayed. If the actual number of picks exceeds this number only every n. pick will be displayed. **Reset** resets the pick display. If the option use bitmap is activated the color scheme for the pick traveltimes will be displayed at the left border.



4.fileheader

new option **value dimension** which is used for the description of the color bars.

5. Edit several Fileheaders:

utm-conversion: now all options from the edit traceheader menu are available

The option **read from one file** is also available for the update traceheader option gps-times and gps-times spatial interpol.

new option **value dimension** which is used for the description of the color bars.

new option **insert markers** which allows to insert markers at the first and last trace.

correct for offset: if the datatype of the loaded profiles is single shot the correction is done based on the option **correct lat.offset** as described within the edit traceheader tabella.

6. traceheader menu

new update format **IDS-GEOX:** the relative coordinates from the geox-files are read in. If present the file UserMarkers.dat will be used for the xy reference coordinate.

Also available within the import and the edit several fileheader menu.

Calculate distancies: for the datatypes single shot and borehole.... the distancies are calculcate based on the individual distance beweeen shot and receiver xy-coordinates.

7. traceheader tabella menu

Calculate distancies: for the datatypes single shot and borehole.... the distancies are taken from:

receiver x-coordinate for single shot

receiver y- or z-coordinate for borehole data depending on the setting of the option use z-coordinate.

New option use z-coordinates. If activated the z-receiver coordinates are also taken into account for the distance calculation.

Smooth rec- z-coord: allows to smooth the receivers (and optionally the shot) z-coordinates.

Option **update fileheader** now always available.

Reverse order: new option within the single column editing - allows to reverse order for a choosable number of traces. The number of traces must be even. The option might be useful if the order of a geophone array has been reversed during the data acquisition. In this case it might be useful to reverse the order both for the distancies and for the x-rec position.

View graph: now zooming and panning is supported. Shifting is possible instead of interpolation.

8. Pick:

Autopick: new object type phase follower. The start of the phase follower will be done automatically by defining the start/end time and the polarity. The program automatically searches the max. value within this time windows of the given polarity at the start position. The distance range may be total or restricted to a start and end distance.

Multioffset veloc.det.: new option **long offset approx.** If activated a fourth-order moveout equation is used instead of the normal vrms equation.

$$t(x) = \sqrt{(t_0^2 + x^2 / V_{ave}^2) / (1 + \frac{gx^2}{t_0^2 V_{ave}^2 (g+1)})}$$

where

$$g = (V_{rms} / V_{ave})^2 - 1$$

The vertical heterogeneity must be entered manually. The parameter heter.(%) defines the parameter g in percent. It is possible to get an estimate of g within the CMP-velocity analysis by crating a manual 1D-model and to use the option long offset approx. there. With the option view/model spreadsheet the vertical heterogeneity for the different layers of the actual model will be displayed and may be used here for the velocity determination. The option is useful if a strong vertical heterogeneity of the velocities is given and for long offsets.

The option interpolate allows to manually smooth the calulated velocities within the additional column window.

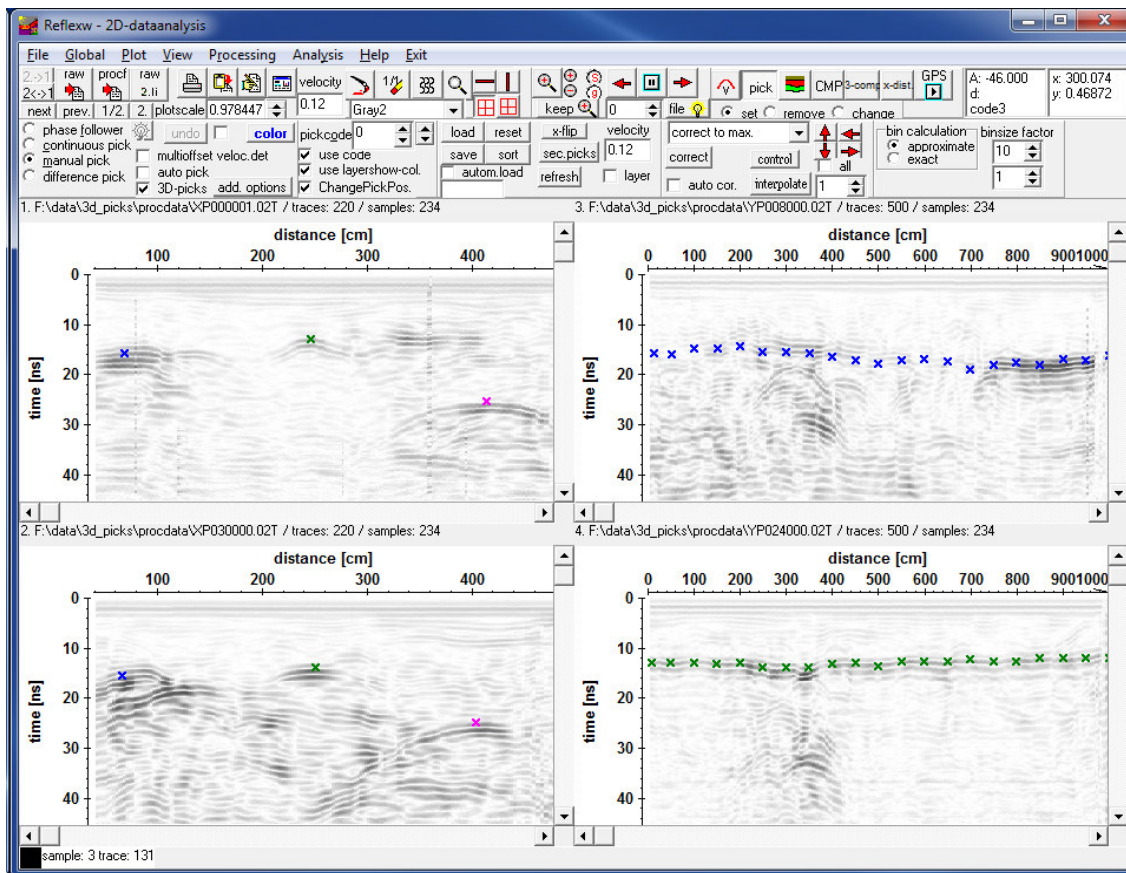
New option **refresh**: allows to reload the actually loaded pick data and secondary picks.

New option **sec.files** in combination with the option autom.load: if activated the picks with the same filename like the secondary files will be loaded automatically analogous to the option autom.load. The option sec.picks as well as the global settings option plot on 2.line will be deactivated automatically.

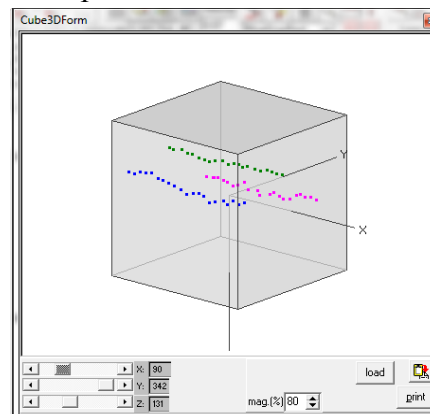
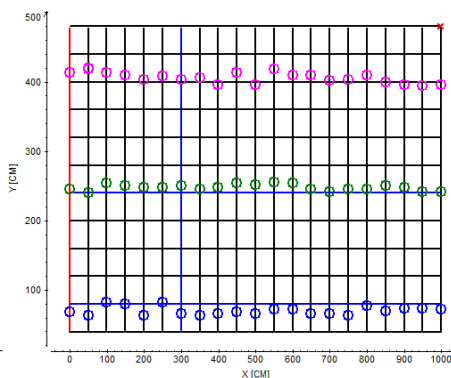
New option **refresh amplitudes** under **correct**: takes the amplitude values for the picks from the actual file. The option might be useful if picking has been done based on another file and you want to take over these picks for another file including the actual amplitude values.

New option **3D-picks**: allows to pick within individual (e.g. parallel) lines. Precondition is that the traceheaders contain the coordinates. Picking may be done within all visible windows and the picks will only be displayed on the corresponding 2D-line. Two different bin calculation methods are available. The fast method **approximate** controls if the pick lies on a straight line between the start and end-coordinate of the profile. A bin value (default 10) allows to increase/decrease the xy-range which controls if the pick belongs to the 2D-line or not. Increase this value if the pick will not be displayed (e.g. if gps-data are used which are not strictly straight) or decrease this value if the picks are displayed within more than one 2D-line. The slow method **exact** controls if the pick coordinates and the traceheader coordinates match. Again a binsize factor is used in order to increase the bin value (default 1 - means that the matching is true if the range is smaller than the actual traceincrement).

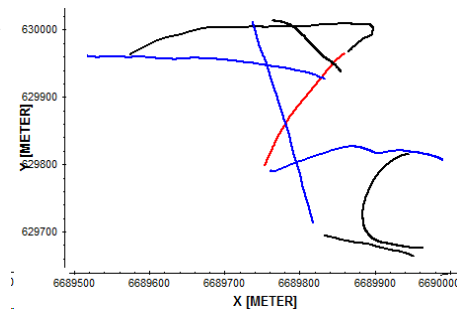
The pick codes serve for a discrimination of the individual objects, e.g. pipes. The options use code and use layershow-col. will be automatically activated as well as the option ChangePicPos. The pick save option check source/receivers positions will be deactivated.



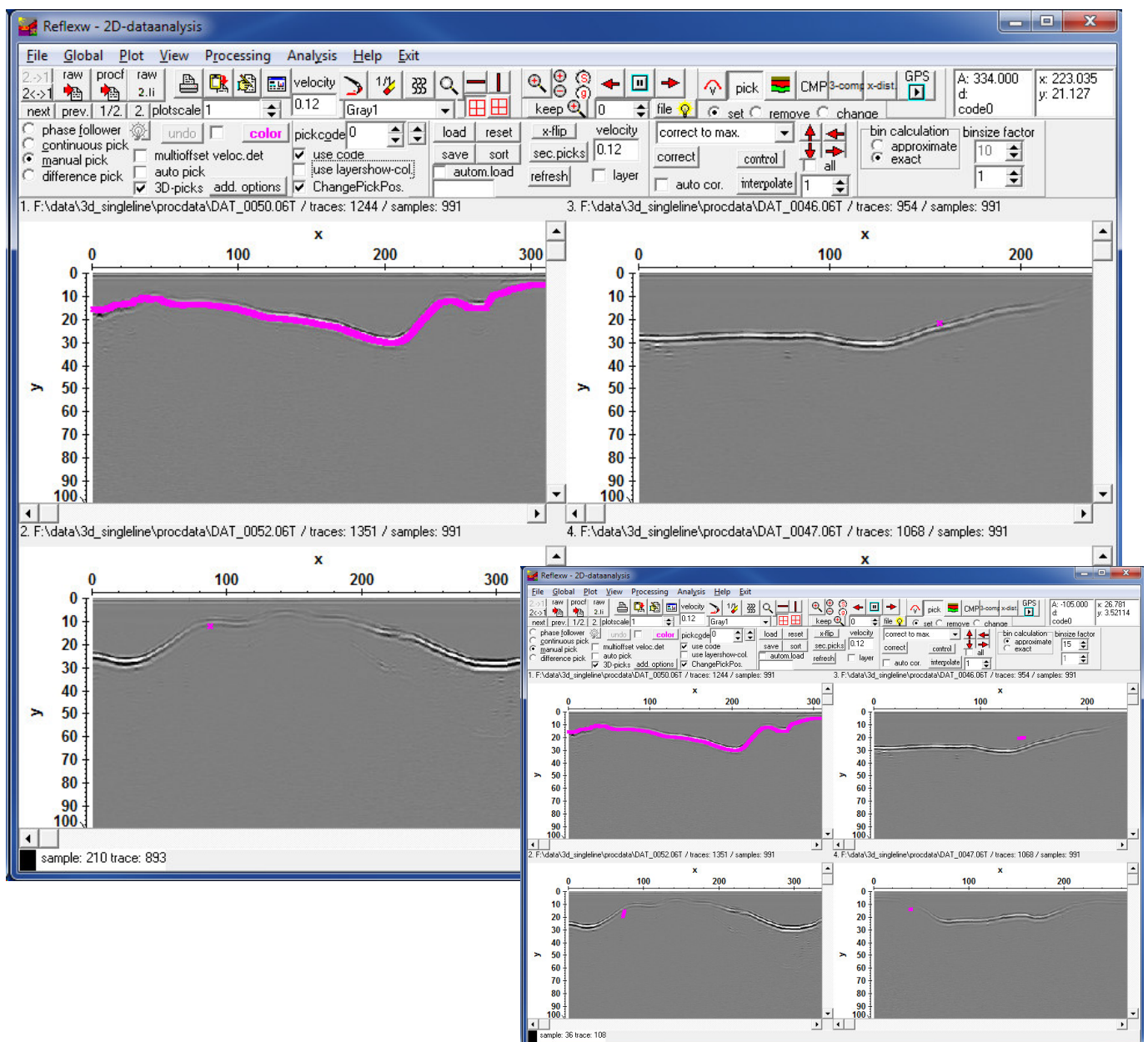
The picks may also be displayed within the profile map using the option view/profile line and activated option show act.picks. A 3D-view is possible if the option 3D-pick cube is activated in addition.



The option may be used for parallel and crossing lines as well as for GPS based crooked lines. In the latter case the exact bin. calculation should be used if the profiles do not ly on a more or less straight line. The crossing picks are displayed automatically.



The bin calculation approximate provides worse results but the computation time is much less whereby it may serve for a first fast check. Depending on the irregularity of profile lines the binsize factor must be increased accordingly., During picking (for all pick algorithms) the bin calculation approximate will be used in any case in order to speed up the picking process. For a correct display of the picks the bin calculation must be reset to exact after having finished the picking.



save picks: New format **DXF** which allows to export the picks to a dxf formatted ASCII file.. The picks may be exported either as point, line or circle. The x and y-coordinates are exported as well as the travelttime or converted depth (elevation). With the opiton use pickcode activated the layer group code within the dxf-file will be set to the pickcode which allows an easy discrimination of the picks also for the line type. For the circle tpye the radius must be entered.
The DXF export is also very suitable to 3D-picks.

9. Layershow:

Now **printing** also supports the **filling** with the pick velocities (options “fill layers” and “with velocities” activated).

Create velocities: based on pick velocities or multioffsets picks - the conversion to layer velocities (option layer velocities activated) is done based on the formula for vrms-velocities

export: new option **default velocities f. last layer**. The velocities below the lowermost layer are not defined. With the option default velocities f. last layer deactivated the velocities above the layer boundary are used also for the region below the boundary of the lowermost layer. With the option default velocities f. last layer activated the default velocity is used for the region below the layer boundary.

Create velocity: New options for taking into account a **dip correction** for multioffset picks and pick velocities. With the option **correct dip** activated the program automatically takes into account the dips of the layer defined by the chosen pick file. The option **slope size** given in traces allows a smoothing for the slope determination. For the dip correction the velocity of the overburden layer must be taken into account. With the option **use max. velocity** the maximum velocity within the whole oberburden layer package will be used.

10. Dataimport:

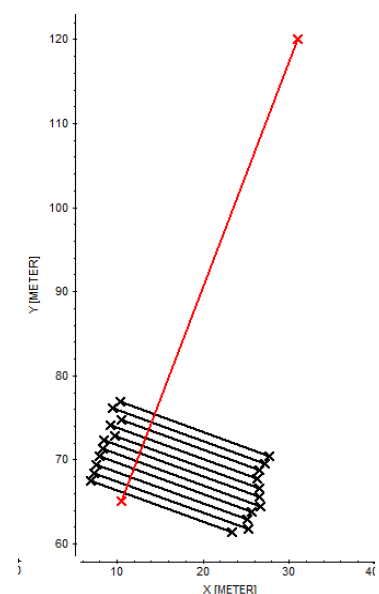
New import format **ASCII-MATRIX-FREQ**: The data are stored within the frequency domain using the following format (csv):

1. row - all frequencies -> number of frequencies
2. row - first frequency values for all positions for the imaginary part
- ..
- (number of frequencies.+1) row - last frequency values for all positions for the imaginary part
- (number of frequencies+2). row - first frequency values for all positions for the real part
- ..
- (2*number of frequencies+1).row - last frequency values for all positions for the y-part

Mala data: full support of the baseline file obm - the coordinates will be read from the obm file

Example:

```
VERSION:1
NUMBER_OF_BASELINES:1
BASELINE:1
START_X:10.450
START_Y 65.200
STOP_X:30.900
STOP_Y:120.100
NUMBER_OF_PROFILES:11
22706
X_LENGTH:4.100
X_ANGLE:90.000
X_DIST2BASE:1.000
22746
X_LENGTH:15.020
X_ANGLE:270.000
X_DIST2BASE:2.000
22825
X_LENGTH:4.200
X_ANGLE:90.000
X_DIST2BASE:3.000
22858
X_LENGTH:14.700
X_ANGLE:270.000
X_DIST2BASE:4.000
```



PulseEkko data: now also the new 32 bit floating point dataformat is supported. For this purpose a new option named **16 bit data** has been included. If deactivated the original data are assumed to be 32 bit floating point values. A quite big scaling value is recommended (e.g. 10000) in this case.

new import format **Decod:** willows to import the gpr-data from the Decod-system.

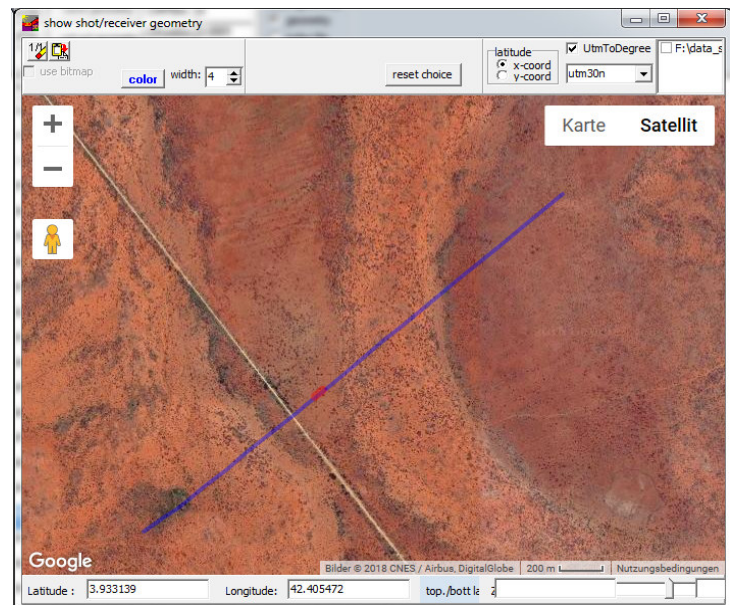
11. Interactive choice:

New option **show filenames** - if activated the filenames of the lines are displayed.

btm: if a tfw (georeferenced bitmap) file is present the scaling of the bitmap will be taken from this tfw file.

12. CMP processing:

new option **use GPS Map** for the option **view geometry** - allows to display the geometry within a Google Map.



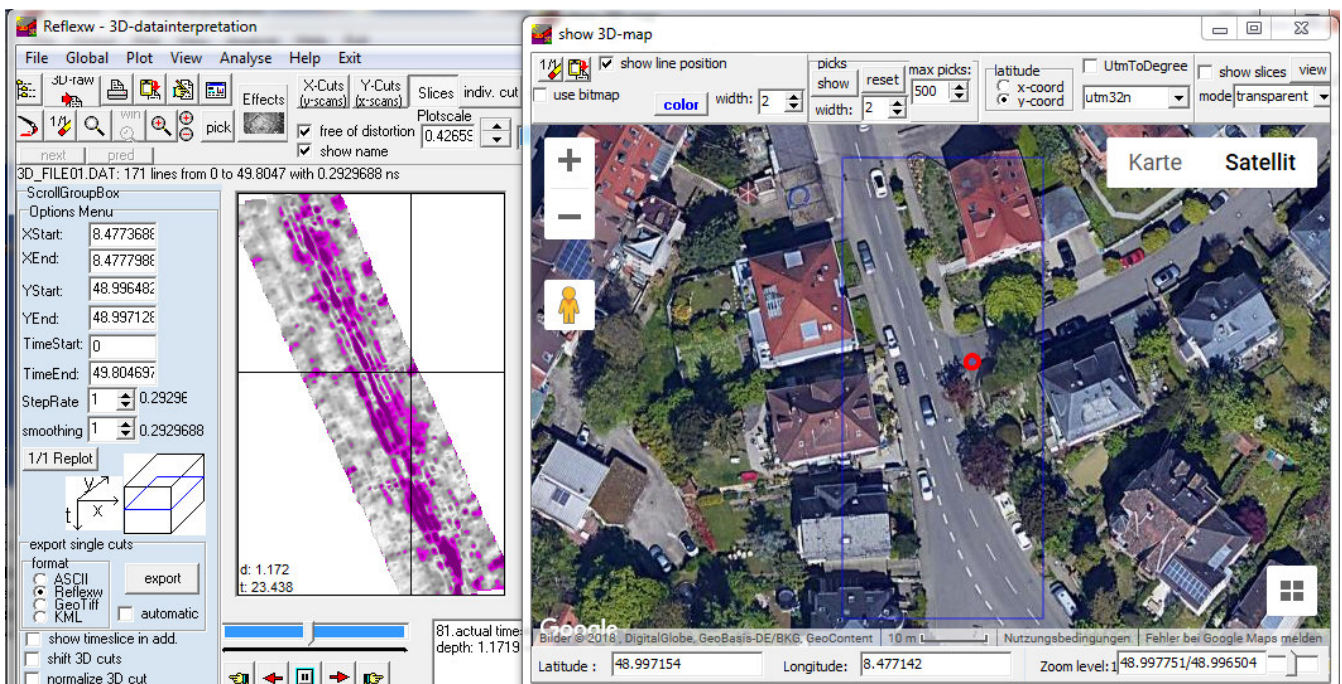
II. 3D-datainterpretation

The generation of the windows for the xyz-cuts has been improved.

If a **smoothing** value greater 1 has been entered the range of the slice will be displayed within the scroll memo.

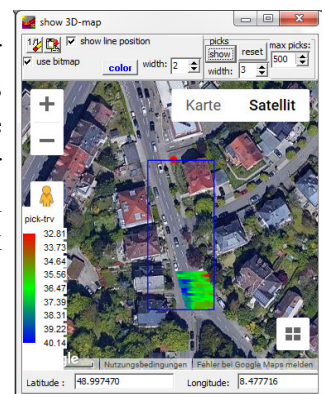
Option **View/mean max values**: if activated the mean and the max.(absolute) values of the actual cut will be displayed within the actual slice memo.

New option **gps map**: allows to view the 3D-area within a Google Map. The **width** and **color** of the rectangle defining the 3D-area may be adapted. Activating the option **show line position** allows to continuously show the actual mouse position by a red circle when dragging over the cut. The option **UTMToDegree** allows to convert UTM-coordinates to degree values based on a given utm zone. The option **latitude** defines where the latitude coordinates have been stored within the traceheaders (x- or y-

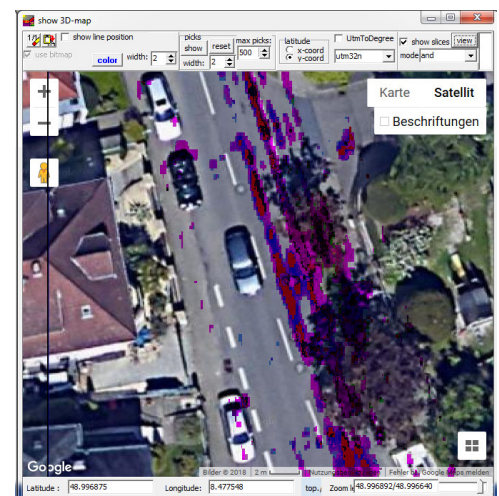
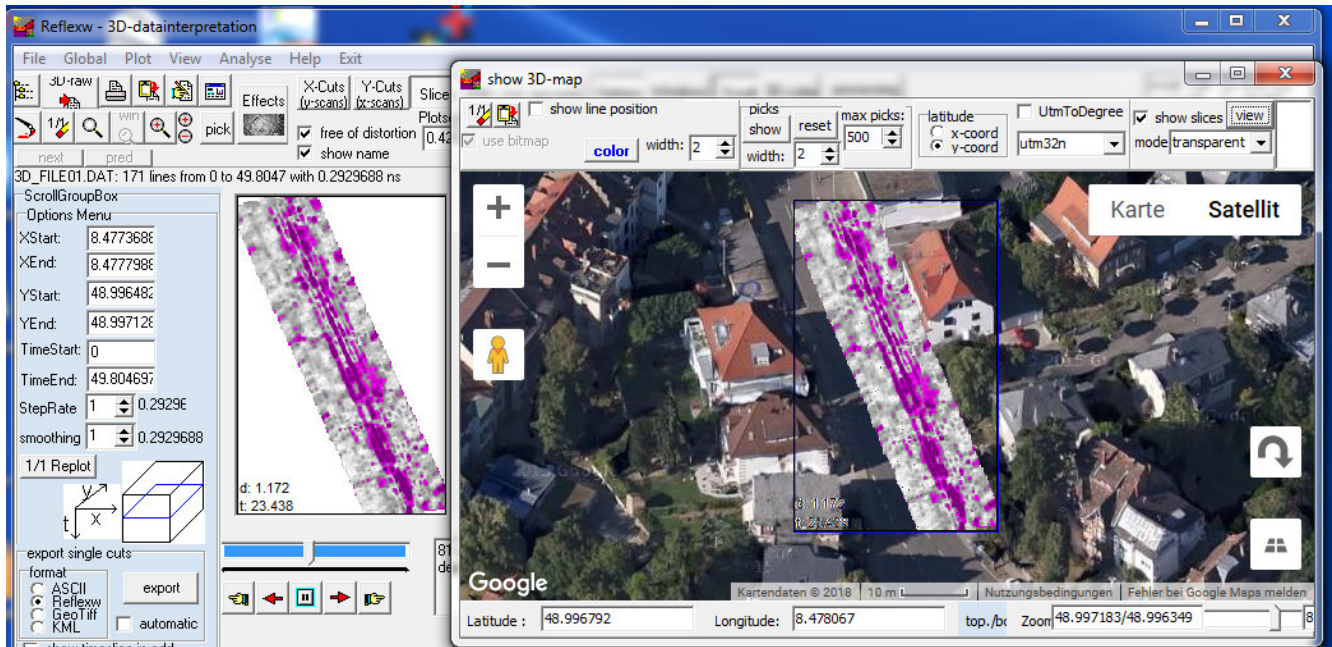


position). **Zooming** and **copy to clipboard** possibilities are included. The option **1/1** resets and centers the display.

The actual **picks** may be displayed (option **show**) using a red-green-blue color scheme for the icons with red corresponding to the smallest traveltime values and blue to the largest traveltime values. The parameter **max. picks** controls the max. picks to be displayed. If the actual number of picks exceeds this number only every n. pick will be displayed. **Reset** resets the pick display. The option **use bitmap** will be automatically activated and the color scheme for the pick traveltimes will be displayed at the left border.



With the option **show slices** activated the actual slice will be displayed within the gps map. The option **mode** allows different combination modes of the gpsmap and the timeslices. With the plotoption **background for 0 value** activated (if not activated a query appears if the option shall be activated) the non covered background may be transparent. Other modes are copy, xor and or.



III. modelling

FD-Modelling:

New outputtype **constant offset**. The option is only available for the source type “point source”. The option allows to simulate a constant offset section for single point sources within one step. The **source-rec.offset** must be entered. The **rec. increment** together with the **rec start** and **end coordinates** define the geometry of the constant offset section. It is not possible to define a diagonal line. If the $x_{end} - x_{start}$ is greater than $z_{end} - z_{start}$ the line always lies horizontally at z_{start} . If $z_{end} - z_{start}$ is greater than $x_{end} - x_{start}$ the line always lies vertically at x_{start} .

Example: In total 201 ZeroOffset (source-rec.off was set to 0) will be calculated from 0 to 50 m at the surface at $z=0$.

New outputtype **CMP**. The option is only available for the source type “point source”. The option allows to simulate a CMP section for single point sources within one step. The **CMP-position** must be entered. The **rec. increment** together with the **rec start** and **end coordinates** define the geometry of the CMP section. The source coordinates will be automatically placed into opposite direction of the receiver coordinates.

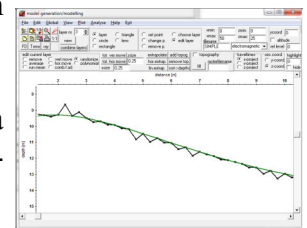
Example: In total 33 shot/receiver combinations will be calculated with the CMP located at 20 m and the first shot at 18 m and the first receiver at 22 m. The last shot is located at 10 m and the last receiver at 30 m. Analogous to the constant offset outputtype it is not possible to define a diagonal line.

output type:	ConstantOffset
source-rec.off	0
rec. increment	0.25
rec x start:	0
rec x end:	50
rec z start:	0
rec z end:	0

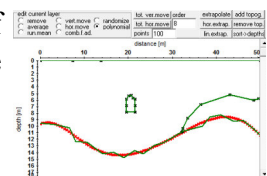
output type:	CMP
CMP-position	20
rec. increment	0.25
rec x start:	22
rec x end:	30
rec z start:	0
rec z end:	0

The sorting after depths now also includes the first layer if topography has been activated.

New option **randomize** for editing any layer. The option allows to generate a rough layer surface. The parameter **xsize** defines the correlation length in x-direction. The parameter **zsize** in z-direction.



New option **polynomial** for editing any layer. The option allows an adaptation of any existing layer by a polynomial of given order. The **order** as well as the number of **points** for the resulting layer may be defined.



Option **circle** and **lens**: now the number of points for generating the layer boundaries of the circle and of the lens may be entered.

New option **generate pickfile (depths)** under **Analyse**: allows to generate a pickfile consisting of depths of the layer boundaries of the current model (except the uppermost layer boundary). The number of the layer boundary is stored within the pick code.

Example of application: conversion of a model taken from refraction data into 2-way traveltimes data for a comparison with a seismic depth reflection section.

IV. CMP velocity analysis

New option **long offset approx.** for the reflection type. If activated a fourth-order moveout equation is used instead of the normal vrms equation.

$$t(x) = \sqrt{(t_0^2 + x^2 / V_{ave}^2) / (1 + \frac{gx^2}{t_0^2 V_{ave}^2 (g+1)})}$$

where

$$g = (V_{rms} / V_{ave})^2 - 1$$

The option is useful if a strong vertical heterogeneity of the velocities is given and for long offsets.

The option will also be used for the semblance and unnormalized correlation. In this case the vertical heterogeneity is also derived from the actual 1D-model. If no 1D-model is present it might be useful to generate a 1D-model from the semblance analysis (for which the vertical heterogeneity was zero) and then run the semblance analysis again.

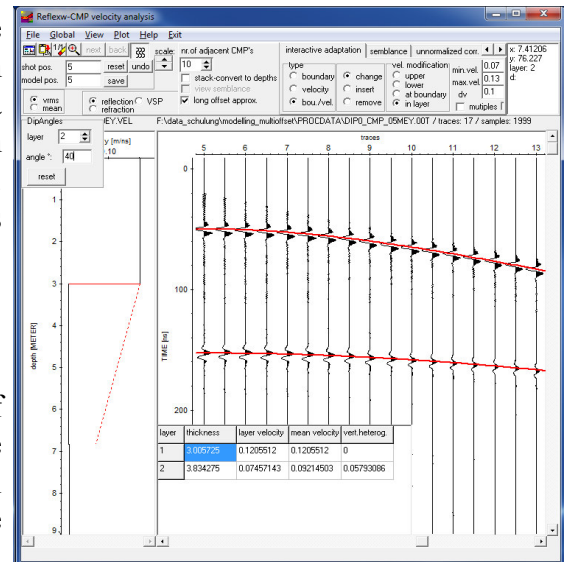
Literature:

Al-Chalabi, M. 1974, An analysis of stacking, RMS, average and interval velocities over a horizontally layered ground: Geophysical prospecting, 458-475

Bilas, E. 2007, Long-Offset Approximations to NMO Function for a Layered Subsurface: 69th EAGE Conference and Exhibition incorporating SPE EUROPEC 2007

New option **model spreadsheet** under view - if activated the actual model parameters (thickness layer velocity, mean velocity and vert.heterog.) will be displayed within a spreadsheet. The vertical heterogeneity (only displayed when the long offset approx. option is activated) may be used e.g. for an improved velocity determination from multi offsets picks within the pick menu.

New type option **bou./vel.** for the interactive adaptation. If activated both the boundary location and the velocity may be changed using the pressed left mouse button. The velocity will be changed for the whole layer independently from the choice of the vel.modification.



CMP 2D-model (from ver. 9.0.5)

Now two different methods for creating a 2D-velocity distribution are available. The first one creates a vrms model (option already available in older versions), the second one interval layer velocities.

The new option **create interval vel.rasterfile** generates an interval layer velocity distribution from the 1D-models. Vertical gradients within the 1D-models are allowed.

After having activated the option **create interval vel.rasterfile** the wanted 1D-velocity models will be queried. A 2D Reflexw rasterfile will be generated from these 1D-velocity models.

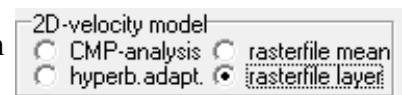
rasterfilename: enter the filename of the Reflexw interval velocity rasterfile. The file will be stored under rohdata under the current project directory. If blank a dummyfile will be used.

min.dist., **max. dist.**, **min.depth** and **max.depth** define the distance/depth range for the Reflexw rasterfile.

Raster-xpoints and **raster y-points** define the size of the Reflexw rasterfile.


create corefile: if activated an ASCII coredatfile is automatically created when creating a 2D-model (same filename with extension cor - see also option Core data/1D models under View MenuItem).

If used for a subsequent migration or time/depth conversion the option rasterfile layer must be activated.



V. Traveltime analysis

New option **reset** allows to reset all picks assigned to the actual layer number. With the option **all** activated all assigned picks will be set.

New option **highlighted shot** may be used for choosing a shot number to be highlighted. The traveltimes which correspond to this shot number will be highlighted and only these traveltimes may be assigned or edited (for example remove a traveltime value). The option might be useful for a large number of shots for which the traveltimes shall be assigned to specific layers. The speedbutton  resets the highlighted shot to 0 which means that the traveltimes for all shots may be available for assignment or editing.

