Main news of the REFLEXW version 7.5 from 01.05.2014

I. 2D-dataanalysis

1.plot options

new option **save in filehader** which saves the actual plotsettings within the fileheader of the actual profile.

Now the time range will be automatically adjusted if the option **correct header elevations** is activated. Until now the original time range had been kept.

New option **back color** which replaces the option BackgroundColor within the global settings menu.

Overlay display split: now a maual change of the plotscale for the primary profile is possible if two profiles will be overlaid using either point/point or wiggle/point mode and "load from fileheader" set to "always each file".

Isolines: new options which allows to specify the isoline display in more detail including the possibility of the display of the values of specific isolines.
Now the isolines are also correctly displayed if the plotoption FlipXAxis has been activated.

Rotate90Degree: now the option **elevation** allows to use elevations for the display of the distance(depth) axis.

Reduction velocity: now the data below time 0 are also displayed if the manual scaling values have been correspondingly entered.
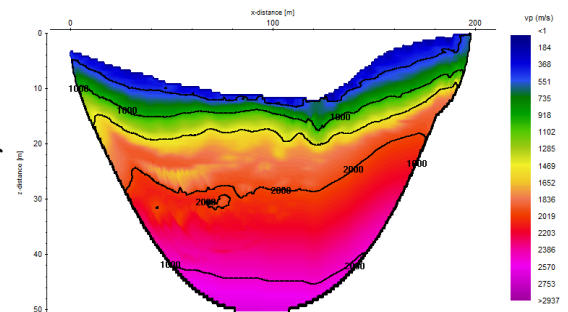
2. Dataprocessing:

new option **close after processing** - if activated the processing menu will be automatically closed after having done the processing.

crosscorrelation: allows to choose between whole profile or lineparts

remove idle traces: new option under edit traces which allows to remove all adjacent traces which have equal or similar amplitude and phase, e.g. stemming from an idle state. You may enter the max. trace difference in percentage from the mean trace difference of all traces.

Subtracting average: now three different averaging options (mean1, mean2 and median) are supported.

Spectrum spikes: now two different methods for the determination of the spikes are included.

Sequence processing: A direct control and modification of a sequence processing flow has been included. A double click on the wanted processing step within the sequence processing table automatically opens the corresponding processing menu showing all entered parameters of the processing step. This can be used either for a control or for a modification. Change the parameters and click on replace proc. - this allows you to change the settings of the actual processing step within the sequence processing flow.
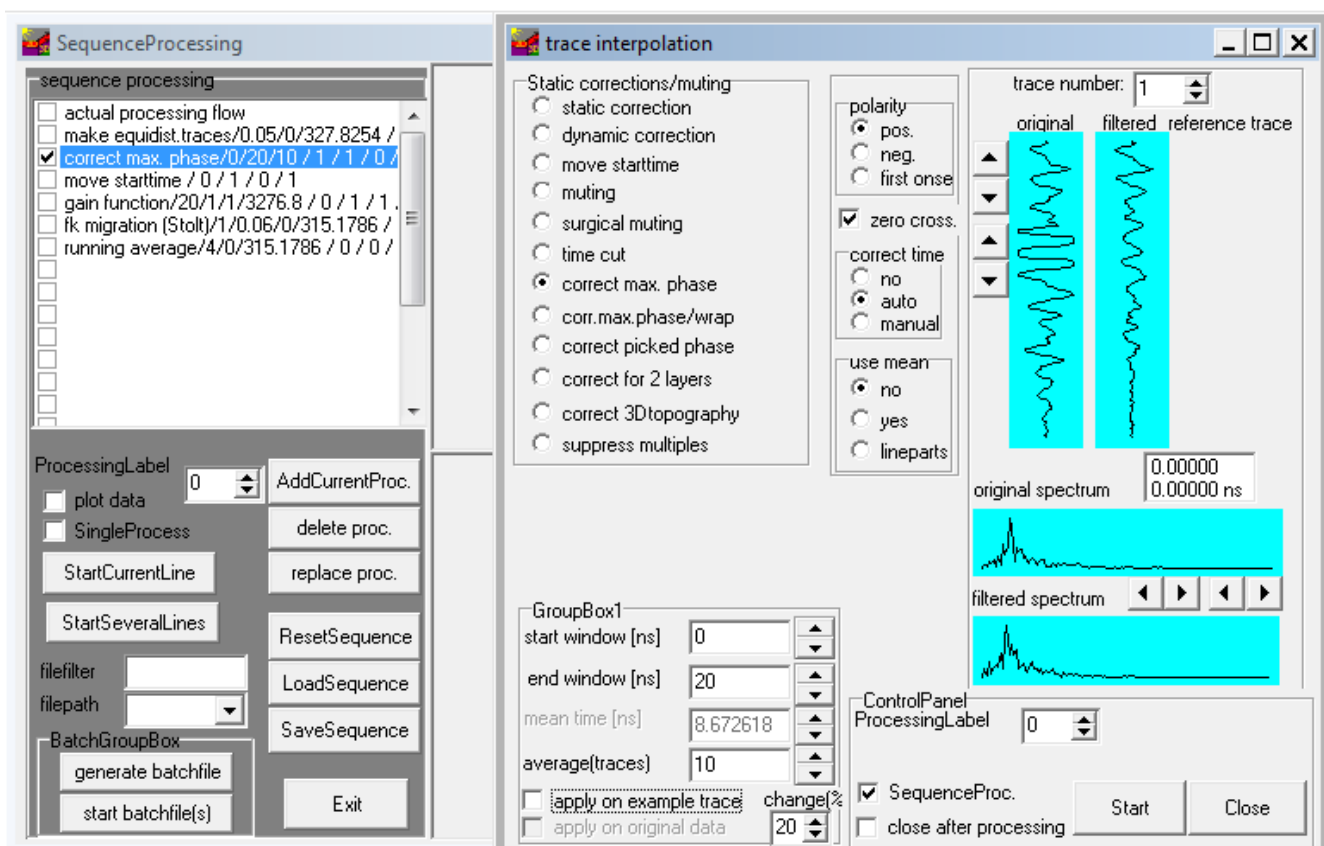
3. CMP-Processing:

new option **lin. decr.** for defining the **min./max. offsets** for stacking. If activated a factor greater 1 may be entered which allows to linearly decrease the max. offset from time end to time start. Example: timerange: 500 ms, max. offset set to 50, lin.decr. set to 5. The max. offset for the start time is 10 and increases linearly up to 50 for the time end of 500 ms. At time 250 ms the max. offset is 30.

Improved display settings when switching between the different ensembles and viewing the actual stack.

Keep the original traceheader coordinates for NMO-correction.

4. View:

TraceHeaderAxis: now also the stored collect times (option **time collect**) may be displayed at the top of the profile. Otherwise and at the bottom or at min. distance the traceheader coordinates will be displayed.

WiggleWindow: new option **frequ.scale** for the display of the ampl.spectrum. The frequency range to be displayed will be decreased by the entered frequ.scale value.

Profile line (trace header coord.): now the files may stem from different directories.

5.update traceheaders

New option **update from GPS ASCII-file** within the global settings menu - if activated a gps marker will be placed at all positions defined within the Ascii-file used for updating the traceheader coordinates.

New option **IDS-times** which allows to read the gps-times for the individual traces from an ASCII-file created by IDS in the following form (here for a 4 channel system):

Chn;PS;Packet;Encoder;ClockCounter;Status;YYYYMMDD;TimeStampHHMMSS
1;0;1;65516;390732;1;20130829;070627.907320
2;0;2;65516;390870;1;20130829;070627.908700
3;0;3;65516;391008;1;20130829;070627.910080
4;0;4;65516;391147;1;20130829;070627.911470
1;1;5;65496;403564;1;20130829;070628.035640
2;1;6;65496;403703;1;20130829;070628.037030
3;1;7;65496;403841;1;20130829;070628.038410
4;1;8;65496;403979;1;20130829;070628.039790

Column 2 defines the tracenumber and column 8 the gps-time.
These gps-times may be used for importing gps-data using the type gps-times.

New option **multiply by constant value** which allows to multiply the xy-coordinates by one constant value.

SaveOnASCII: option has been completely renewed. The option allows to save the traceheader coordinates on an ASCII-file using free positioning and separator. Activating this option opens a new window where you may define which parameters shall be written on the ASCII-file. Each line of the ASCII-file contains the desired informations of the individual trace. In addition to the parameters mentioned above two additional parameters can be written out: marker and TimeCollect. Marker values > 0 and < 100 define a distance marker, marker values >= 100 a comment marker. TimeCollect is the acquisition time in seconds after midnight. This value may be used in order to synchronize time based GPS-data (see option **update** based on **GPS-times**).

Each line contains the desired parameters for one trace in the order (place) the parameters have been chosen. The option reset resets the choice. The small buttons "s" and "g" allow to save and load the actual settings on the file TraceHeaderAsciiFormat.txt stored under the program directory.

With **n.trace** greater 1 it is possible to restrict the number of traces to be written out.

Three different **separator** chacaters can be chosen (Tab, Comma or Blank).

The option **start** stores the selected traceheader values of the actual file within the ASCII-file with the given filename. The option **batch start into one file** allows to save the selected traceheader values of different files within one ASCII-file. After having activated the option the wanted files must be selected (multiple file choice using the ctrl or shft key).

The option **batch start** allows to save the selected traceheader values of different files within different ASCII-files. The filenames of the ASCII-files are automatically determined from the data filenames.
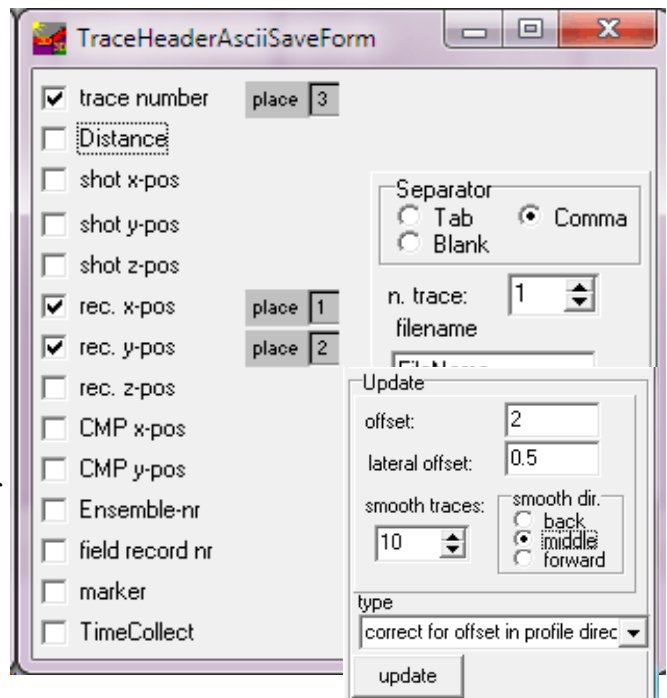
Correct for offset in profile direction: now the smooth directions can be entered. The possibilities back, middle and forward allow to simulate different coupling mechanism of GPS and source/receiver devices. Back might be useful for a flexible connection, middle or forward for a rigid one.

Trace delay: new option available for 'RAMAC-GPS', 'WSKTRANS-GPS' and 'CSV-GPS' which allows to specify a delay number for the trace numbers given within the gps-file. Enter a number greater than 0 if the gps is delayed. This number will be subtracted from each given tracenumber within the gps-file.

Gps-times: now the option latitude(x-coord./y-coord.) is also available if the format NMEA has benn chosen.

utm-convertsion: now the irregular utm-zones will also be automatically taken into account. These are the zone 32V (South Norway) and 31X, 33X, 35X, 37X (Svalbard).

New option **NMEA-string no degree** available for 'IDS-GPS', 'PulseEkko-GPS', 'UTSI-GPS', 'GEODE-GPS', 'GSSI-GPS'. 'GPS-times' or 'GPS-times spatial interpol.' allows if activated that the $GP Strings do not contain degree values but the string will be interpreted as it is.

6. Traceheader tabella:

It is also possible to change the data from a special column. First you must click on the header parameter using the right mouse button. Then a small window opens with different possibilities:

read from file: load the data for one header column from a 2 column ASCII-file. Each line of the ASCII-file consists of two columns. The first column contains the tracenumber and the second one the value of the traceheader header which shall be read in. A linear interpolation inside and extrapolation outside will be done at those positions where no data have been specified.

Example with two values for the header parameter time collect:
10 63359.00
20 63405.00

add.const. value: allows to add a constant value for all data of the currently chosen column.

View graph: displays the data of the chosen column within a separate window where an interpolation and a smoothing is possible. Click on interpolation and select the first and secondary point by a left mouse click within the graph. A linear interpolation between the two points will be done. The option smoothing performs a running smooth of the data over an adjustable range of traces (option factor f. smooth).
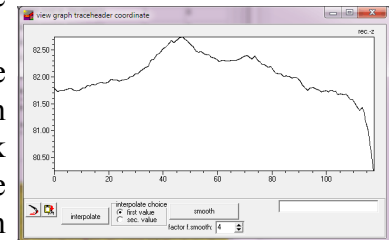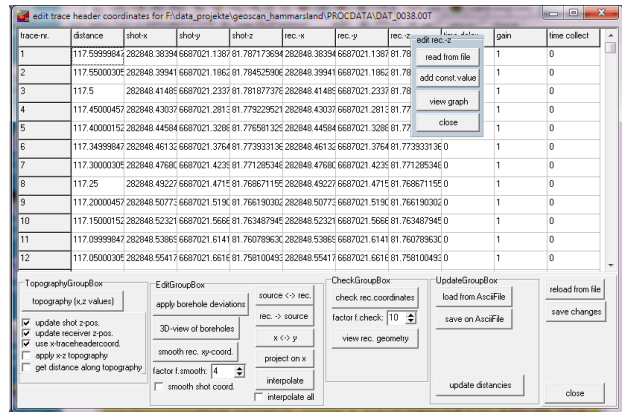
smooth rec. xy-coord.: option has been improved and after having completed the smoothing the original and the smoothed coordinates will be displayed for a direct check.

Smooth shot coord.: new suboption for the option smooth rec. xy-coord. - if activated the shot xy-coordinates will be smoothed in addition to the receiver coordinates.

rec -> source: new option which saves the receiver coordinates within the shot coordinates

interpolate all: new suboption for the option interpolate - if activated all spreadsheet parameters will be interpolated for the chosen rows.

View rec.coord.: if activated the receiver coordinates selected within the spreadsheet will be displayed using a blue cross. If the option interpolate has been activated it is possible to select the coordinates within the view profile image by using the left mouse button. Then the first row of the spreadsheet jumps on this position.

7. Edit several Fileheaders:

- new option **distances instead of tracenos** for the update traceheaders type **ASCII-file/int.**
- new option **subtract const. value** integrated
- new option **interpolation equal data** integrated

- new option **ChangeProcLabel**: allows to change the processing label for the chosen datafiles. A new proc. label must be entered. Already exsiting datafiles with this processing label will be removed.

8. Pick:

sec.picks: now the different formats are available for loading the secondary picks.

Pick color: now the global pick color will be saved within the Reflexw ini-file.

Correct picks: new option **correct for header elevations** which allows to correct the actual picks based on the traceheader elevations.

New format: **ASCII-free format**
The format allows to save the picks on an ASCII-file using free positioning and separator.
Each line contains the desired parameters for one pick in the order (place) the parameters have been chosen. The option reset resets the choice. The small buttons "s" and "g" allow to save and load the actual settings on the file FreeAsciiFormat.txt stored under the program directory. This saved setting is also used if the picks shall be reloaded again.
With **n.pick** greater 1 it is possible to restrict the number of picks to be written out.
Three different **separator** chacaters can be chosen (Tab, Comma or Blank).
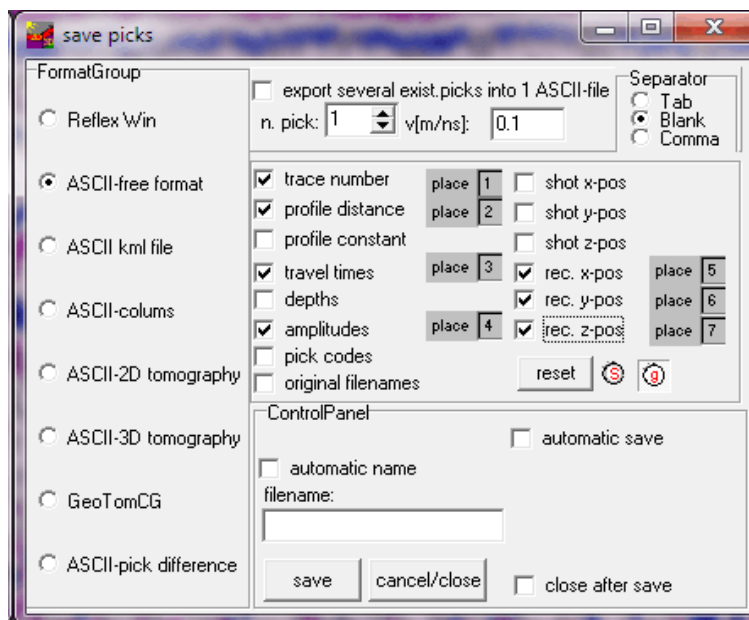
The format **ReflexWin old version** does not exist any more.

9. Dataimport:

new import format **MALA RD7**: supports the 32 bit data of the new Mala GPR device.

new import format **GEOSCAN32:** supports the dataformat .gpr and .gpr2 of the OKO-2 GPR from Geotech.

new import format **UWB-MEODAT:** supports the dataformat from the UWB radar system from Meodat.

FreeFormats: now the actual settings of the timeincrement, the file- and traceheader size and the number of samples are stored and automatically reloaded the next time.

10. Dataexport:

Bitmap export with activated option **scale relationship**: option has been improved. Now the pick colors will be used if the layershow colors have been chosen when saving the picks.

II. CMP velocity analysis

The **stacked trace** of a loaded **second model** will be displayed as well if the option view/stack trace has been activated.

III. Modelling

edit current layer: new subption **comb.f.add.model** - the option allows to combine the actual layer with the same layer of the loaded additional model. The option might be useful for example in order to combine two different layer parts.

New **layer type triangle** which allows to place a triangle with predefined parameters analogous to circle and rectangle.

New option **lin.extrap.** which allows the extrapolation of the interface only to the left and right borders of the model by using the slope of the first/last model points.

input of model parameters menu - option **import(x,z)**: new format **ascii-(x,y,z)**: one line contains the x- and y-coordinates (e.g. UTM coordinates) and the z-coordinate which defines the depth. The distance along the line will be automatically calculated from the x- and y-coordinates. The first given (x,y) coordinate pair must correspond to the start (min.) position of the model.

New option **flip model in distance direction** under edit which allows to flip the actual model in distance direction.

New option **create several 1D-models** under edit which allows to generate 1D-models from the actual 2D-model.

<u>ray-tracing:</u>

with the **calculate** option **datatraveltimes** activated it is possible to save the calculated travaltimes into one single file (small button at right of outputfile activated).

The discrimination of the different calculated **rays** has been improved.

<u>Tomography:</u>

3D-tomography: now plotting the **rays** for a 3D-tomography is possible. The rays are plotted within a seperate 3D-cube window.
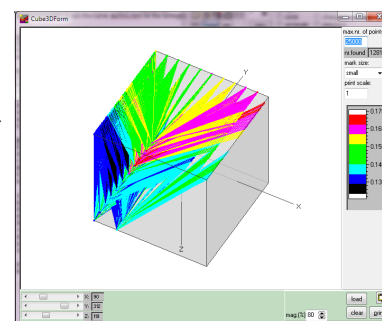

New option **restrict to max. angle °**. If activated only the pick data with an incidence angle smaller than the given one will be considered.

Option **create topography from data** now connected to the option **load data**.

IV. Traveltime analysis

new possibility for **moving** all traveltimes of one or more shots. Enter the start shot and end shot and the move size. When clicking on move all traveltimes the traveltimes of all shots lying between start and end shot will be shifted by the entered move size (given in time dimension, normally ms).
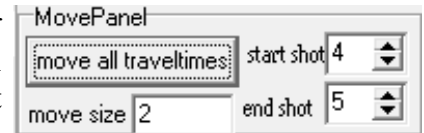
New option **shift shots** which allows to compensate different elevations levels of the shots and the receivers (e.g. shot within a borehole). The entered mean shift value will be added in order to compensate the different elevation levels when using the options insert zero traveltimes or using the topography option when inverting the uppermost layer.

New option **remove whole line** which allows to remove a whole shot when using the option change or to reset all assigned traveltimes of the actual shot.

V. 3D-datainterpretation

scroll option:

KML export: now the option UTMToDegree is also available for the "image overlay" export type.

3D-cube option:

indiv. cut: new possibility of creating a **2D-Reflex file** from the actual individual cut. The fill scale has been improved. The actual settings of the individual cut will be saved.