New Features in...

TrapTester 6

SEISMIC INTERPRETATION > STRUCTURAL MODELLING > FAULT SEAL

TT 6.130 INCREMENTAL UPGRADE

CONTENTS

Introduction

This document describes the new headline features and enhancements that make up the TrapTester 6.130 incremental upgrade and differentiate it from the latest 6.120 release. TrapTester 6.130 is distributed as a patch release and can be installed as such over an existing 6.12x installation. For a more detailed description of the new features please refer to the relevant sections in the TT user-manual.

Important Notes:

1) **A database update will be applied to TT projects when opened using TT 6.130**. A project updated for TT 6.130 will not be accessible using previous TT versions. **Please back-up projects prior to performing the database update.**
2) No changes have been made to the TT license feature-set.

TrapTester-to-TrapTester/Petrel Data Link

Introduction

TrapTester has long supported data transfer from Petrel to TrapTester. TrapTester 6.130 extends that support to allow the data transfer between TrapTester sessions, and from TrapTester to Petrel.

The updated link will allow export of the following data types from TrapTester:

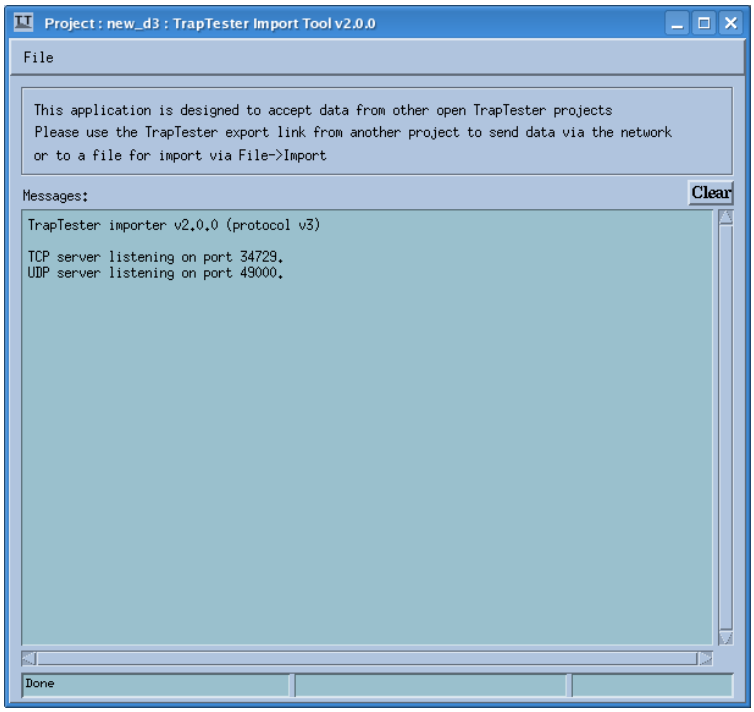
- 3D survey, arbitrary lines (TT to TT only), navigation and BGL volume data
- 2D survey, lines, navigation and BGL volume data
- Horizon data, pointsets and surfaces
- Fault sticks, pointsets and surfaces
- Fault polygons (TT to TT only)

Further updates to the link are planned to support additional data types including, but not limited to:

- Well trajectories, logs and fault/horizon picks
- Cellular (ECLIPSE-style) grids, attributes and faults

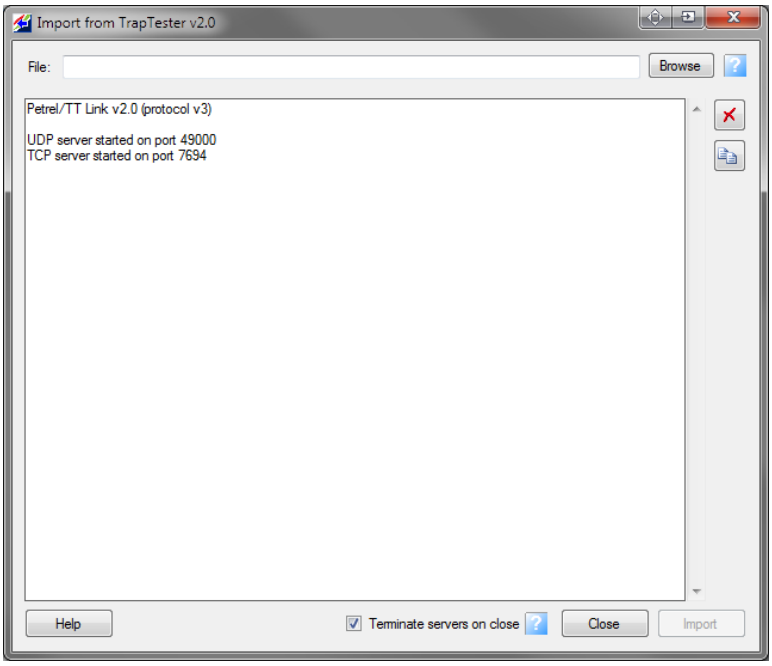
Exporting from TrapTester

Before exporting, the companion import tool must be running in the destination TrapTester project or Petrel instance. The TrapTester import tool may be launched from the "Import from TrapTester..." option of the "Interpretation Data Links" or "Well Data Links" submenu (inside the "Data" menu of the TrapTester control interface):



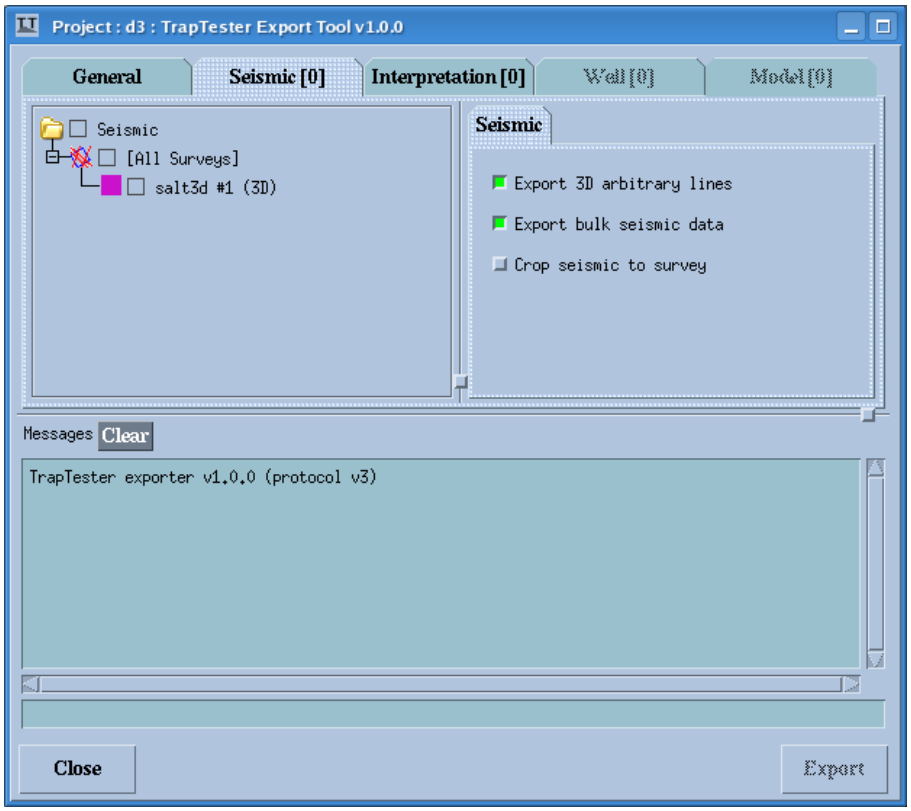
Alternatively if exporting into Petrel, the Badley Petrel Plugin import dialog must be opened by double clicking the "Import from TrapTester" menu item in the "Plug-ins" group of the "Processes" dialog in Petrel:

Note: *the Badley Petrel Plugin must have been installed for this feature to be available*



In the source project, to export from TrapTester to another running TrapTester project choose the "Export to TrapTester..." option from the "Interpretation Data Links" or "Well Data Links" submenu (inside the "Data" menu of the TrapTester control interface). To export data from TrapTester to a running instance of Petrel, choose the "Export to Petrel..." option instead.

The TrapTester export link will appear as below:

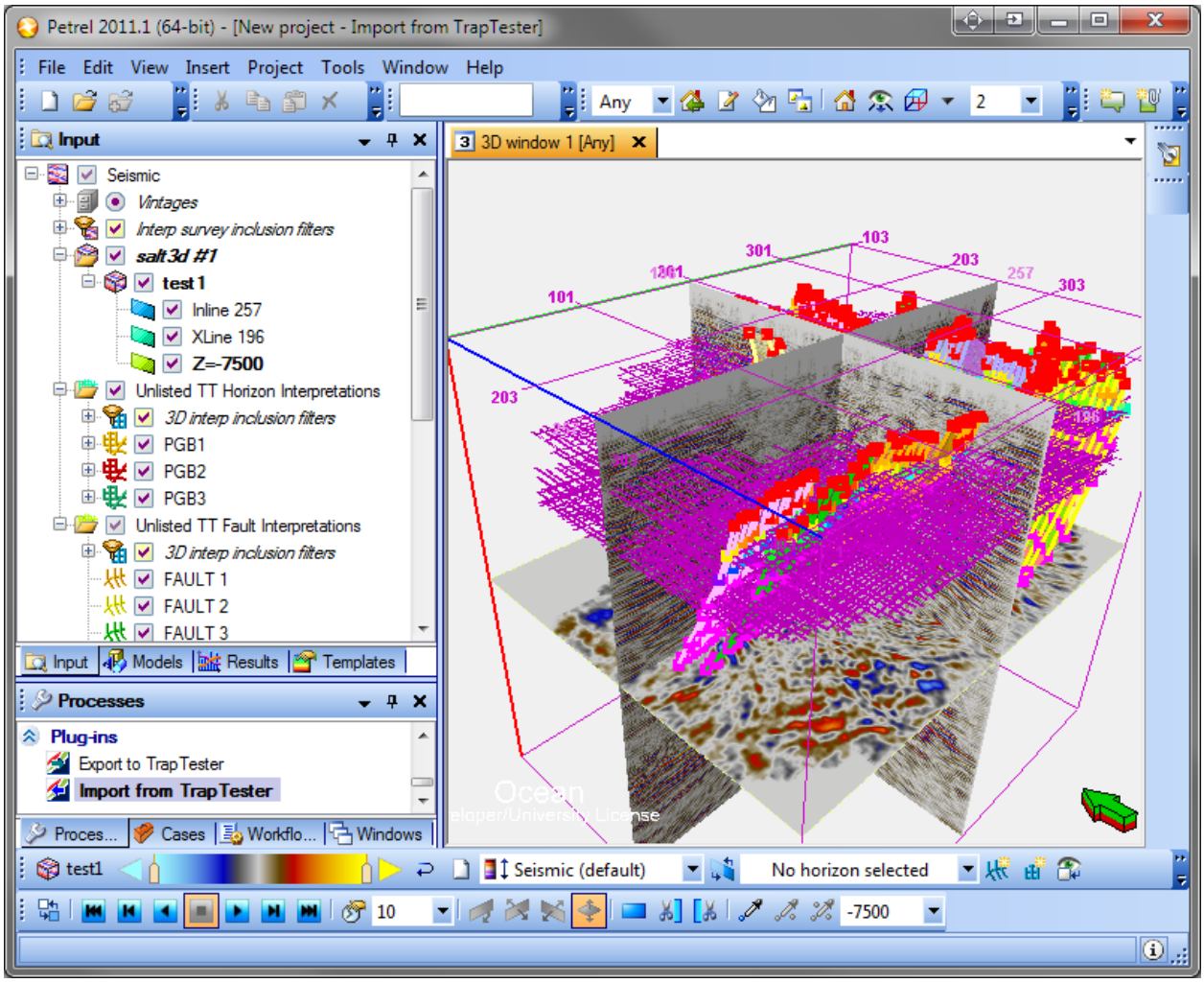


In the initial "General" tab, choose to export to a standalone file or an existing instance of TrapTester or Petrel accessible on the local network.

Select items to export from the "Seismic" and "Interpretation" tabs. Options available for each tab are shown to the right of the data tree. Help is displayed in the lower status bar as the mouse is moved over the interface items.

Finally, press the "Export" button to send the selected items to the destination TrapTester or Petrel project.

Once complete, the data is available in the destination TrapTester or Petrel project:



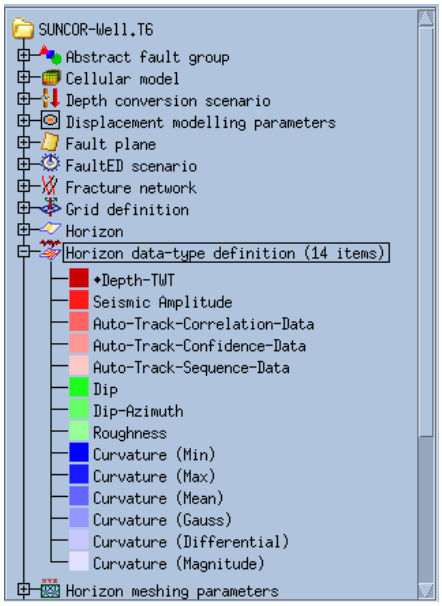
Horizon Data-Types

Introduction

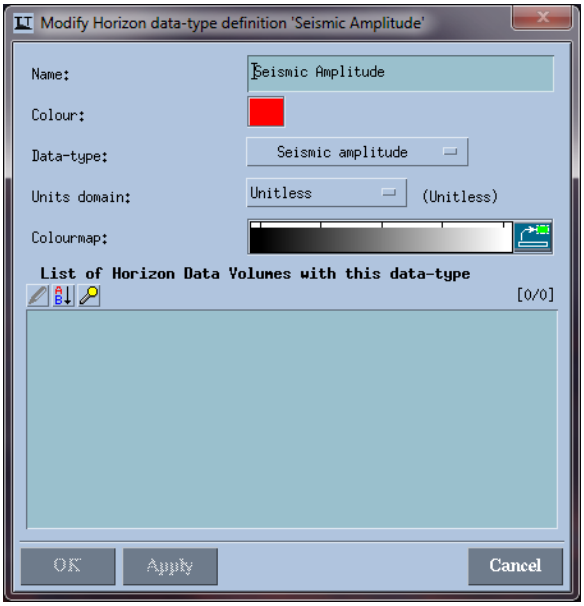
Survey-based horizon raw data (interpretation on 2D lines and 3D rows, columns etc) is stored by TrapTester in "Horizon Data Volumes" within the project database. Each Horizon Data-Volume is linked to a 2D or 3D survey. A TrapTester horizon can contain any number of Horizon Data-Volumes. Prior to the TT 6.130 update, the Horizon Data-Volume only stored depth or TWT (Z) values but in TT 6.130 this has been extended so that other data may be stored alongside. Each type of data, including the interpretation data itself, is referred to as a Horizon Data-Type and requires a corresponding Horizon Data-Type Definition in the database. The Horizon Data-Types effectively provide for multi-dimensional Horizon Data-Volumes - each data-type serving a different dimension.

Horizon Data-Type Definitions

When a TrapTester project is upgraded or created using TT 6.130, a number of "standard" Horizon Data-Type Definitions are created in the project database. These can be seen in the Database Explorer tool alongside any that have been created by the user. The "Depth-TWT" data-type is a special case as it cannot be deleted and always appears at the top of the list; it corresponds to the Horizon Data-Volumes' Z data.



Tree *view of Horizon Data-Types*



Horizon Data-Type Definition Editor

The tree-view shown above shows all of the current "standard" Horizon Data-Types. Each Horizon Data-Type Definition has a "*Name*", "*Colour*", "*Data-type*" assignment, "*Unit domain*" and a "*Colourmap*". Horizon Data-Type Definitions created automatically by TrapTester (such as the standard ones shown above) have a fixed type-assignment and units domain that cannot be changed. Horizon Data-Type Definitions created by the user in the Database Explorer and the Horizon Volume Utility are not restricted in this manner. The list of type-assignments for an Horizon Data-Type Definition are shown in the table below:

Data-Type	Description
Depth-TWT	General picked, auto-tracked or gridded horizon Z data
Seismic Amplitude	Amplitude data from seismic volumes
Auto-track Correlation	3D auto-tracker correlation values
Auto-track Confidence	3D auto-tracker confidence values
Auto-track Sequence	3D auto-tracker tracking sequence values
Dip	Dip extraction from 2D or 3D horizon data
Dip-Azimuth	Dip azimuth extraction from 2D or 3D horizon data
Roughness	Surface roughness measure (3D data only)
Min Curvature	k1, Surface min curvature (3D data only)
Max Curvature	k2, Surface max curvature (3D data only)
Mean Curvature	(k1+k2)/2
Gaussian Curvature	(k1*k2)
Magnitude Curvature	Max (|k1|, |k2|)
Other	Any other type of data

Horizon Data-Type type-assignments

The data-type assignments are used in TrapTester applications to simplify the list of data-types that are made available for a given task. For example, when extracting seismic amplitude data for a horizon, only those data-types that are assigned "Seismic Amplitude" may be selected.

The Horizon Data-Type Definition editor also contains a list of all of the Horizon Data Volumes that have data stored for that data-type. This list is for information only and can be used as a means of accessing the Horizon Data Volume editor window.

Horizon Data-Type & Data-Volume Removal

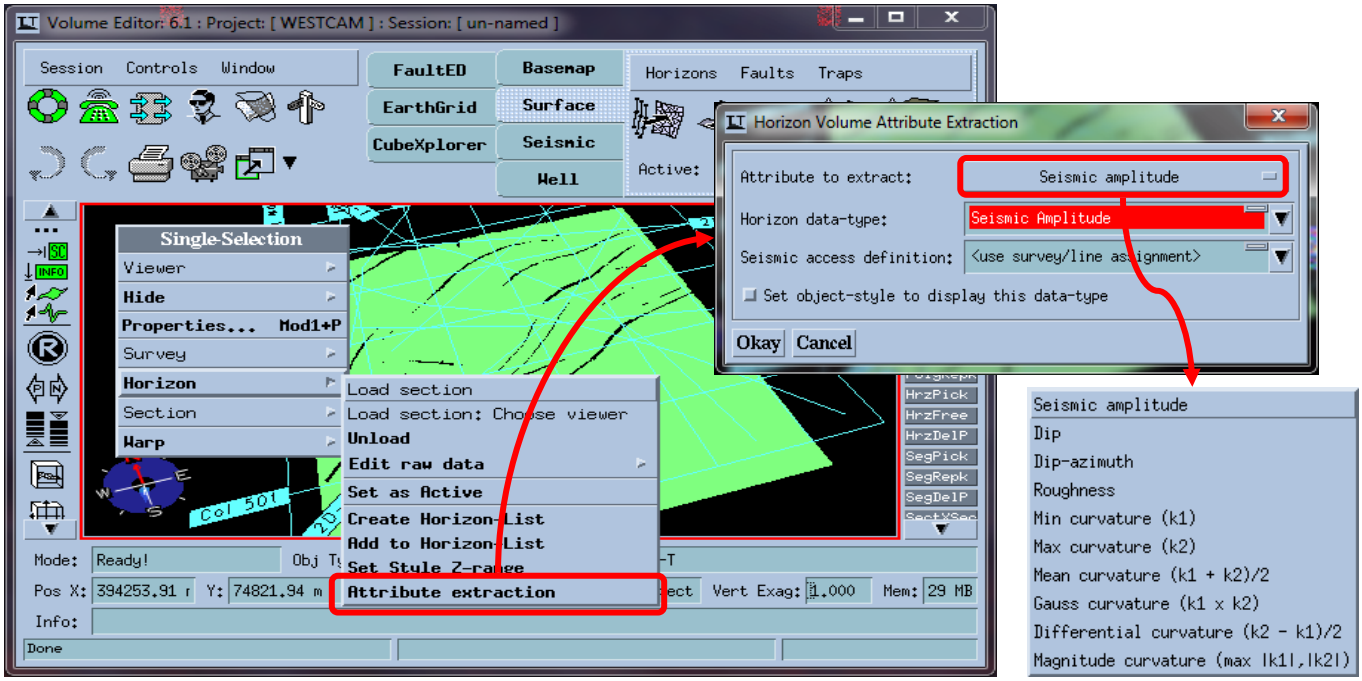
The deletion of a Horizon Data-Type Definition will result in the deletion of all data that it refers to across all Horizon Data Volumes in the project.

It is not possible to delete the primary Depth-TWT data-type as this is required at all times to provide storage of the basic horizon Z data.

The deletion of a Horizon Data-Volume will result in the deletion of all the data for all data-types in that volume.

Horizon Volume Attribute Extraction

The Volume Editor has a new option on the viewer-popup menu that is available when one or more 2D or 3D Horizon Data-Volume objects are selected. The associated horizon(s) must have been loaded via the Surface module's horizon manager.



The Horizon Volume Attribute Extraction tool is accessed via the MB3 popup menu *Horizon->Attribute extraction* option. The tool provides the means of extracting the attribute selected in the "*Attribute to extract*" option. The results of the extraction will be stored for the chosen Horizon Data-Type. The list of Horizon Data-Types will only show those that have a type-assignment that matches chosen "*Attribute to extract*". If the option "*Set object-style to display this data-type*" is enabled, the display-style will be set to show the extracted data on each of the objects selected. Specific details regarding each of the attributes are given below.

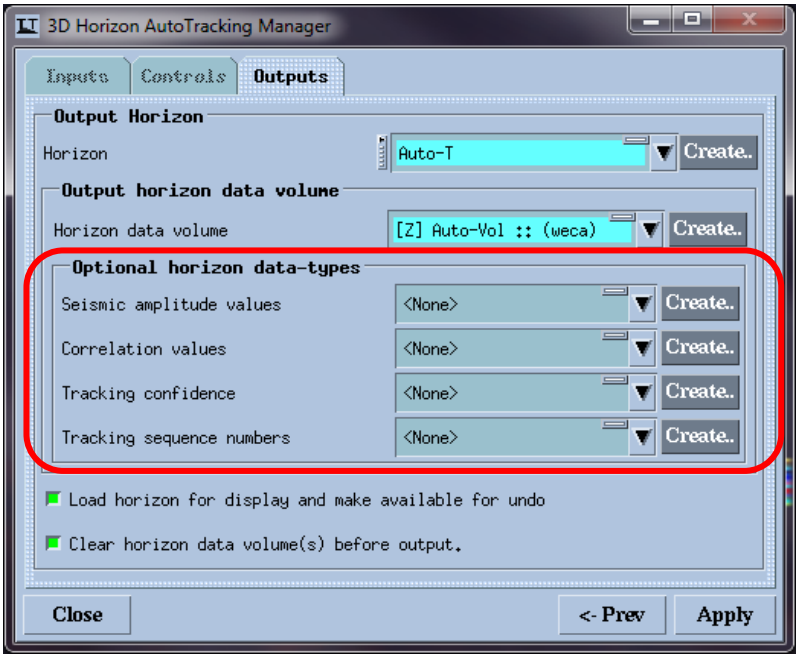
Seismic amplitude: This option will extract seismic amplitude data at all points in the selected Horizon Data-Volumes. The "*Seismic access definition*" option is made available to select the Seismic Access Definition to use. If this is left to *"<use survey/line assignment>*" the extraction will use the Seismic Access Definition(s) that are assigned to the associated survey. (For Horizon Data-Volumes belonging to 3D surveys the row Access Definition is used while for those belonging to 2D surveys the 2D-line or line-specific Access Definition is used).

Dip & Dip-azimuth: For Horizon Data-Volumes belonging to 3D surveys the dip and dip azimuth values will be computed where there is continuous data coverage. For 2D data these attributes are computed in the line direction.

Roughness & Curvature: Extraction of these attributes will only operate for Horizon Data-Volumes belonging to 3D surveys where there is continuous data coverage. For all other cases the output will be set to a null value.

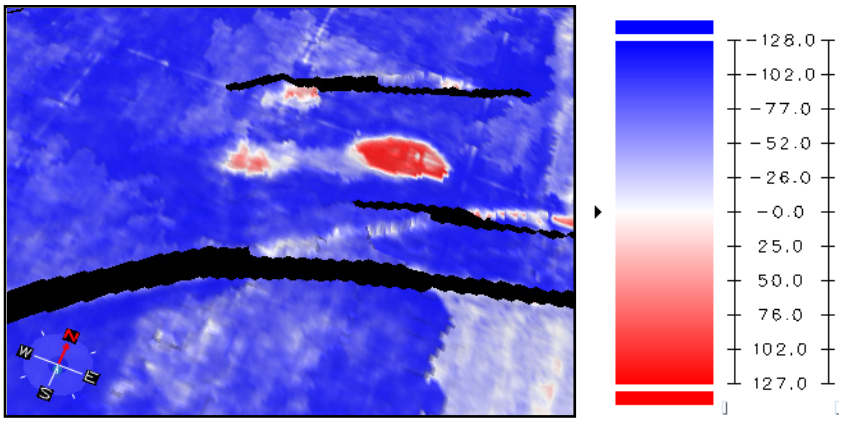
3D Auto-Tracker Optional Attributes

For this update, the Volume Editor's 3D horizon auto-tracker (in the CubeXplorer Module) has been extended to make use of the new Horizon Data-Types system. In so doing, the user-interface has been simplified into three flow-based tabs, *Inputs*, *Controls* and *Outputs* which contain all the original interface components and the additional output options that are described in more detail below.

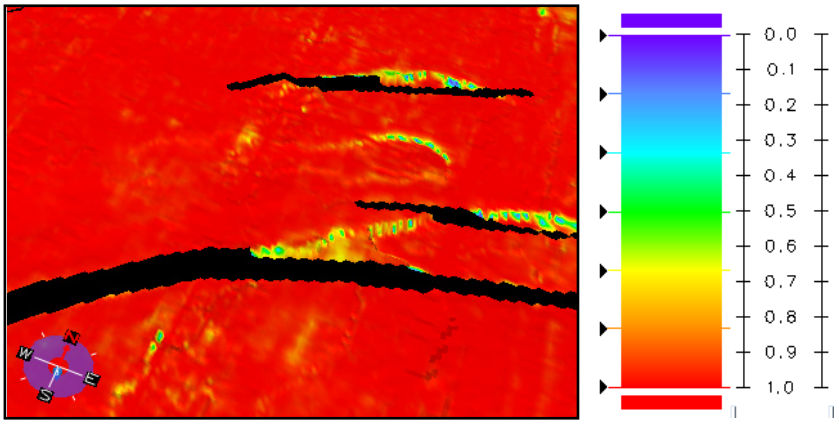


The "*Outputs"* tab now contains options for the generation and storage of up to four data-types to be stored as part of the output Horizon Data Volume. For each data-type there is a Horizon Data-Type list containing items with a corresponding type assignment and a "<*None*>" item. If the "<None>" item is selected no data will be stored for that data-type. The output data-types are described below.

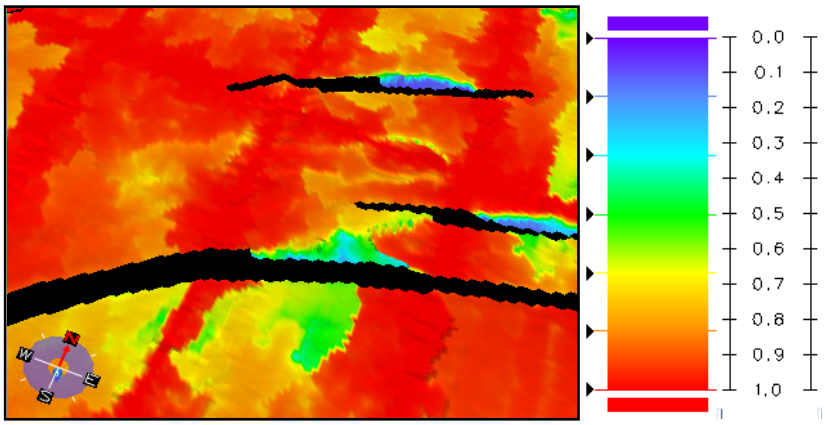
Seismic amplitude values: The seismic amplitude taken from the 3D seismic volume at the auto-tracked points.



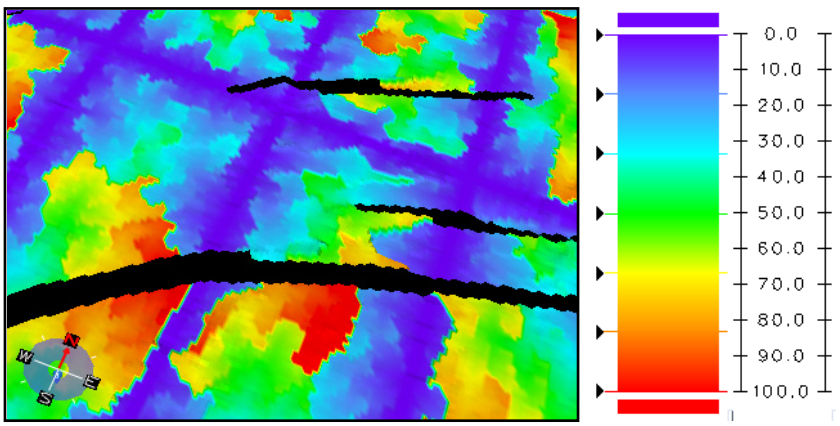
Correlation values: This is the raw cross-correlation value that resulted in any given auto-tracked point being chosen during the auto-tracking process. These values range from -1.0 to +1.0. +1.0 indicates a perfect correlation, -1.0 indicates no correlation.



Tracking confidence: For any autotracked point, P, the tracking confidence C_p is given by $C_p = C_{N1}.C_{N2}.C_{N3}....C_{Nn}$, where C_{N1} to C_{Nn} are the normalised correlation values for all the points on the path to P from a seed point. (The normalised correlation value is computed as $C_N = (C+1)/2$ where C is a raw correlation value). Tracking confidence values range from 0.0 to 1.0. A value of 1.0 is assigned to the seed point locations. Tracking confidence values will diminish at each successive point taken by the auto-tracker along auto-tracked paths.

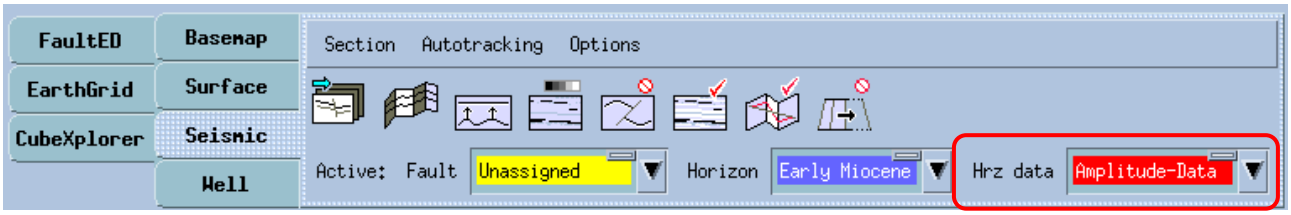


Tracking sequence numbers: This is simply the number of steps the auto-tracker has taken to get to any given point from a seed point.



Amplitude Extraction While Picking

The interpretation of horizons on seismic data can now be enabled to automatically extract the seismic amplitude data whilst picking or editing. The amplitude data is stored in the Horizon Data-Volume according to the "*Active*" Horizon Data-Type. The "*Active*" Horizon Data-Type is controlled by a selection in the Section Module tab in the Volume Editor's main window.



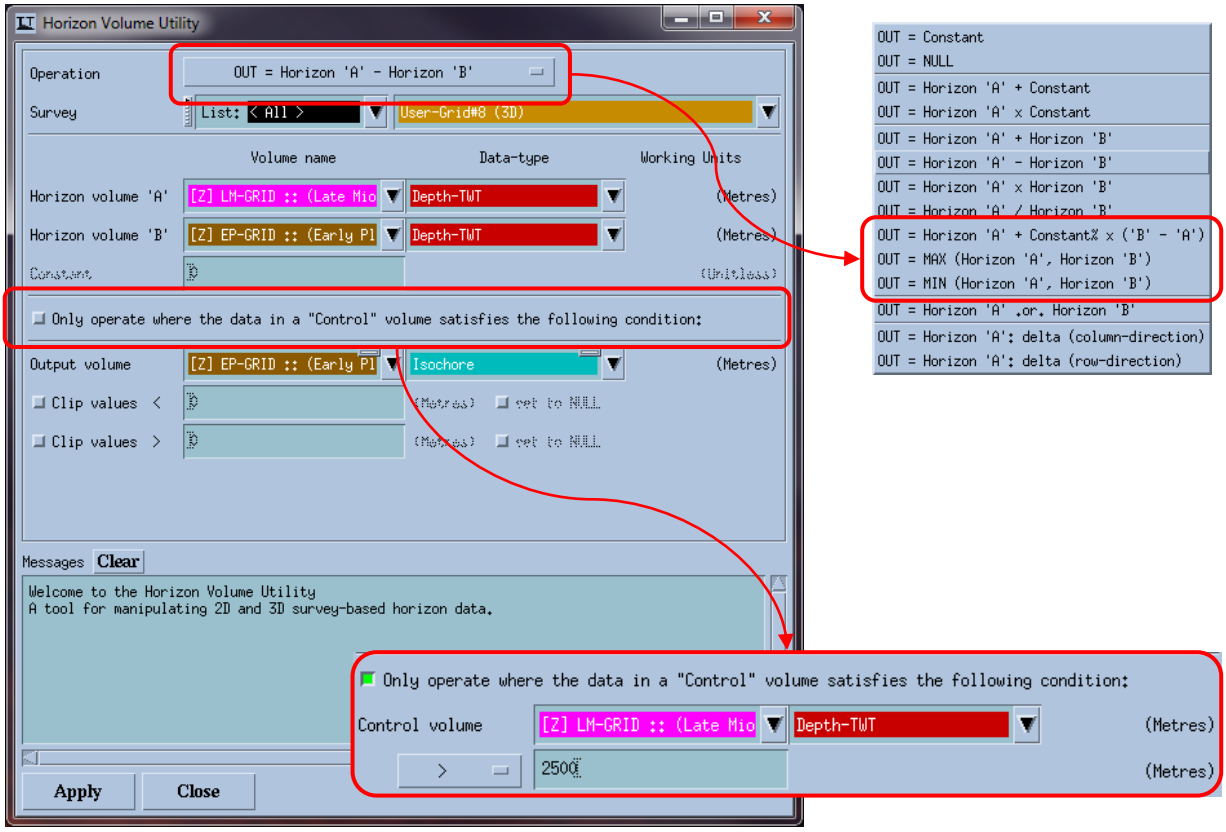
The "*Active*" Horizon-Data-Type list contains a *"<None>*" item, which, when selected, disables the automated amplitude extraction. The "*Active*" Horizon-Data-Type lists Horizon Data-Types that have a type-assignment set to "*Amplitude data*".

In order to visualise the results of the automated amplitude extraction while picking, it is best to have the horizon loaded via the Surface Module and visible in a second (different) viewer with the style set to show the horizon raw data coloured by the appropriate data-type.

Horizon Volume Utility Extensions

Apart from the addition of three more operations and an improved operation filter, the Horizon Volume Utility has been extended to cater for the new Horizon Data-Types. Where before, the operations acted solely on horizon Z-data and created new forms of horizon Z-data, they now operate on Horizon Data-Types that are sub-selections of the Horizon Data Volumes.

As an example, it is now possible to perform a subtraction between the Depth-TWT data of horizon volume 'A' and horizon volume 'B' and store the result in horizon volume 'A' using a different Horizon Data-Type - called say, "Isochore". Such an operation is shown in the image below.



Additional Operations

Out = Horizon 'A' + Constant% x ('B' - 'A'): this operation is designed to operate on the horizon Z values (Depth or TWT) and provides a means of computing isochore layers at a percentage value between horizons 'A' and 'B'.

Out = MAX (Horizon 'A', Horizon 'B'): the output will be the greater of the horizon 'A' and horizon 'B' input values.

Out = MIN (Horizon 'A', Horizon 'B'): the output will be the lesser of the horizon 'A' and horizon 'B' input values.

The "Control" volume

If enabled, a control volume and data-type may be specified so that the chosen operation is only undertaken at points where the data in the control volume satisfies a given condition. In the above example the condition is set to only perform the "*Horizon 'A' - Horizon 'B'*" operation at points where the Depth-TWT data in Horizon 'A' is greater than 2500m. The data in the output volume is left unchanged at points where this condition is not satisfied.

Creating a new output Horizon Data-Volume & Data-Type

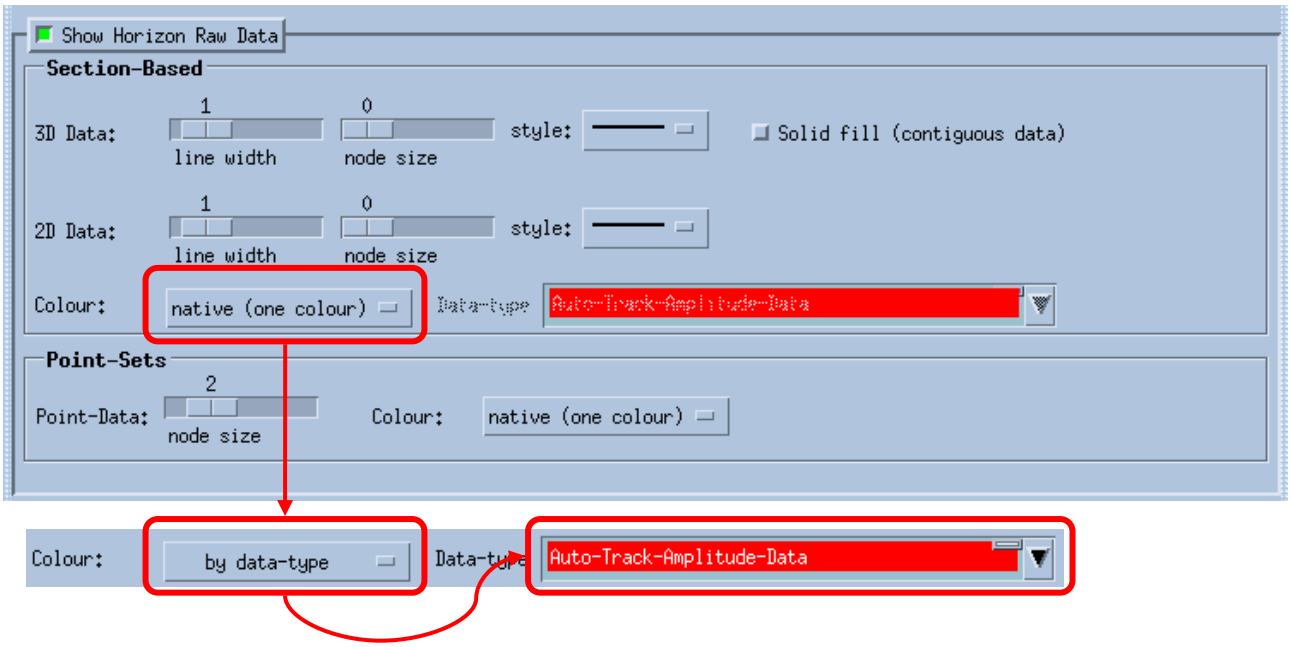
It is possible to create new Horizon Data-Volumes and Data-Types using the MB3 popup menu or clicking the "mini" menu button in the top-right corner of the relevant list and selecting the "*Create*" option.

Unit considerations

With the addition of the Horizon Data-Types it is possible to perform operations and generate output with data in different unit domains. If there is a domain conflict a warning message will be issued prior to allowing the operation to commence.

Displaying Horizon Data-Types

The Volume Editor's Surface Module style system is used to control the display of data associated with Horizon Data-Types. First, the associated horizon must be loaded via the Surface Module's Horizon Manager.



Having loaded the horizon, the "*Show Horizon Raw Data*" option (under the "*Surface->Horizons*" tab in the Style Editor) should be enabled. It will be noticed, at this stage, that the layout of the controls under this option has changed; the "*Section-Based*" controls now being subdivided into 2D and 3D data and the "*Point-Sets*" controls having their own colour-coding option.

The "*Section-Based*" controls include the "*Colour*" options. This may be set to "*native (one colour)*", "*by time/depth*" or "*by data-type*".

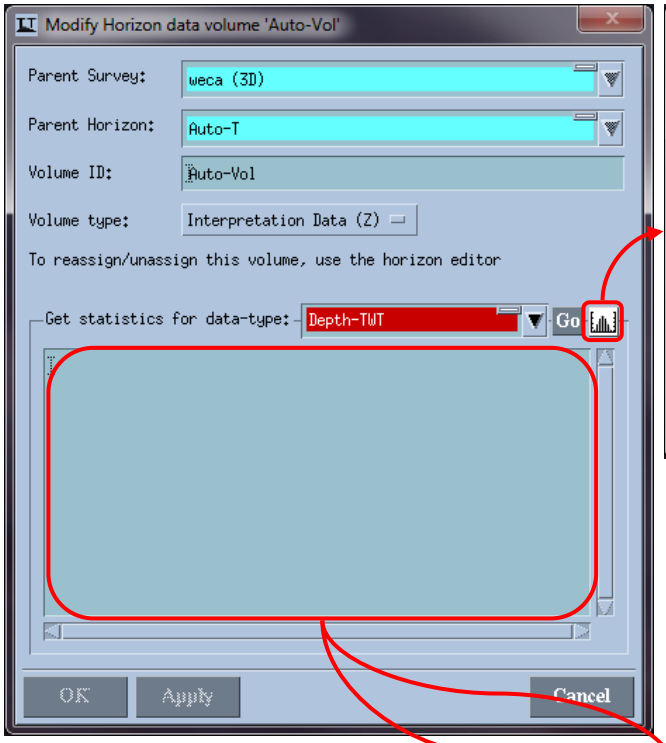
Selecting the "*by data-type*" colouring option will enable the "*Data-type*" list, to the right. This list will contain all of the available Horizon Data-Types. Having made a Horizon Data-Type selection it is possible to apply the style settings as required to the display. Note that the Depth-TWT Horizon Data-Type is omitted from this list as the colouring coding of the horizon data according to this property is controlled directly using the "*by time/depth*" colouring option and the colour-bar at the top of the "*Horizons*" style settings.

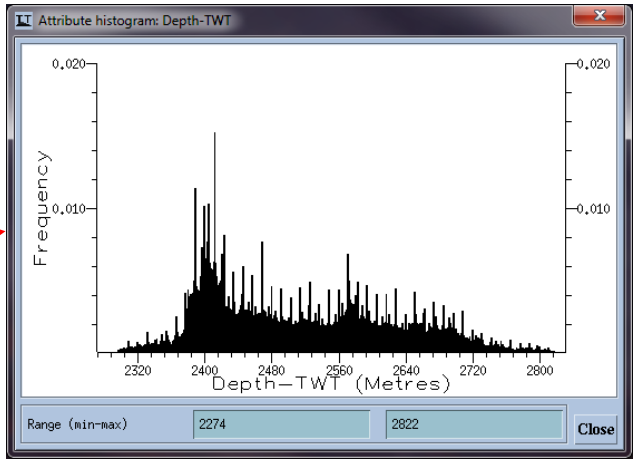
Note that when applying a "*by data-type*" colouring mode to multiple horizons in the same viewer that not all the horizons may have the chosen Horizon Data-Type available. In such cases the horizon data will exhibit an out-of-range colour for the chosen Data-Type.

The colour-map and data-range used to represent the Horizon Data-Type's data is defined in the Horizon Data-Type Definition. The editor for the Horizon Data-Type Definition may be accessed from the Style Editor by (a) double-clicking on the Horizon Data-Type in the list selection, (b) using the MB3-popup menu option on the Horizon Data-Type in the list selection, or (c) clicking on the "mini" menu button in the top-right corner of the Horizon Data-Type list and selecting the "*Edit*" option.

Horizon Data-Type Statistics

The Horizon Data-Volume Editor has been extended to provide statistical data for each of the available Horizon Data-Types. The statistics are obtained by clicking the "Go" button or by simply selecting a data-type from the list. The top-most item in the list is "<All>" which, when selected, provides a text display of the statistics for all Horizon Data-Types in the project





Histogram view

Text stats for 'Depth-TWT' data-type

Data-type	N-rows	N-cols	N-active	N-null	Min	Max	Avg	Std-dev	Units
Depth-TWT	579	591	333149	9040	2274	2822	2513.9	112.538	Metres

Text stats for '<All>' data-types

Data-type	N-rows	N-cols	N-active	N-null	Min	Max	Avg	Std-dev	Units
Depth-TWT	579	591	333149	9040	2274	2822	2513.9	112.538	Metres
Auto-Track-Amplitude-Data	579	591	333149	9040	-114	110	-87.7398	22.2087	Unitless
Auto-Track-Correlation-Data	579	591	333149	9040	0.00205448	1	0.971792	0.0574391	Unitless
Auto-Track-Confidence-Data	579	591	333149	9040	7.54344e-11	1	0.884861	0.140932	Unitless
Auto-Track-Sequence-Data	579	591	333149	9040	0	208	31.9116	29.2112	Unitless
Amplitude-Data	******	******	******	******	******	******	******	******	NO DATA
Isochore	******	******	******	******	******	******	******	******	NO DATA

For any data-types for which the volume contains no data the textual display indicates "NO DATA".

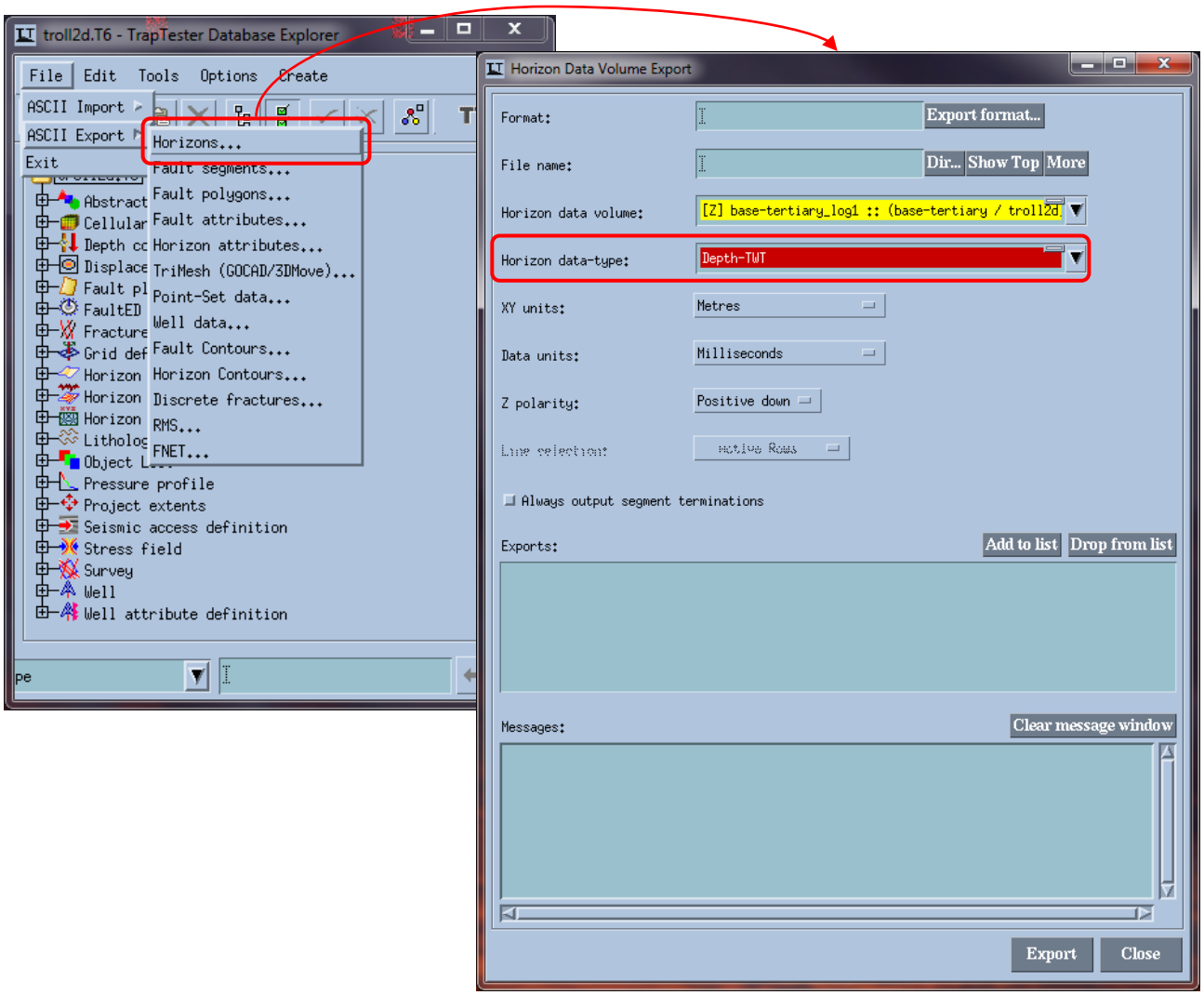
For Horizon Volumes that belong to 2D surveys the text stats are displayed for each 2D line with summary stats for all lines given at the end. The histogram display will show data for all the 2D lines.

Accessing the Horizon Data-Type Editor

It is possible to access the editor window for the selected Horizon Data-Type from the data-type list; use the MB3 popup menu or click on the "mini" menu button at the top right of the list and select the "*Edit*" option.

Exporting Horizon Data-Types

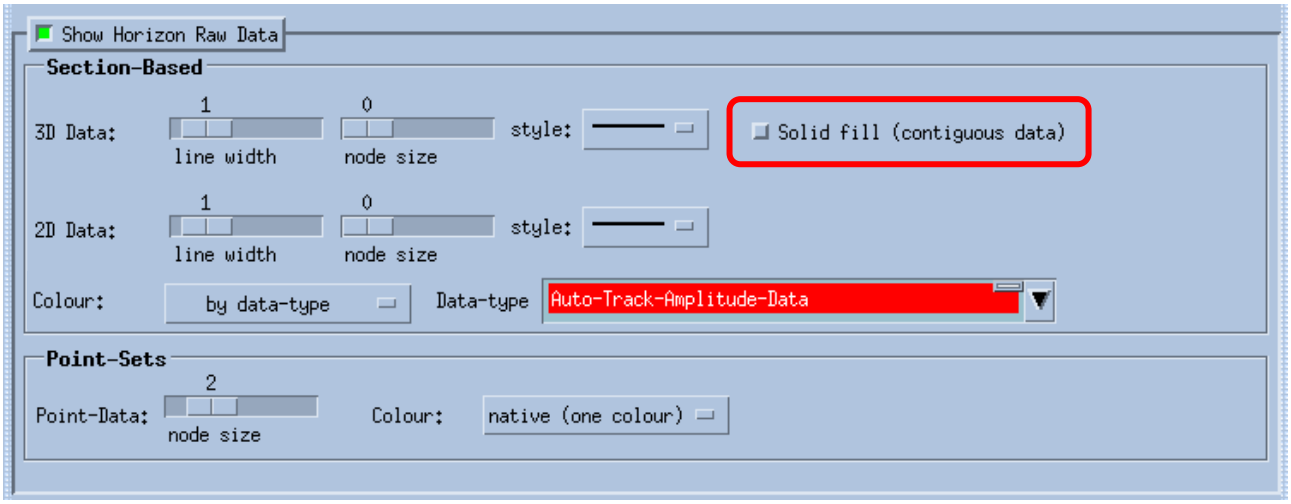
ASCII export of Horizon Data-Volume's is achieved using the Horizon export option in the Database Explorer. The Horizon Data-Volume Export window has been extended with a Horizon Data-Type list selection. The selected data-type will be exported (as if Z-data) from the chosen Horizon Data-Volume according to the chosen format and in the chosen units.



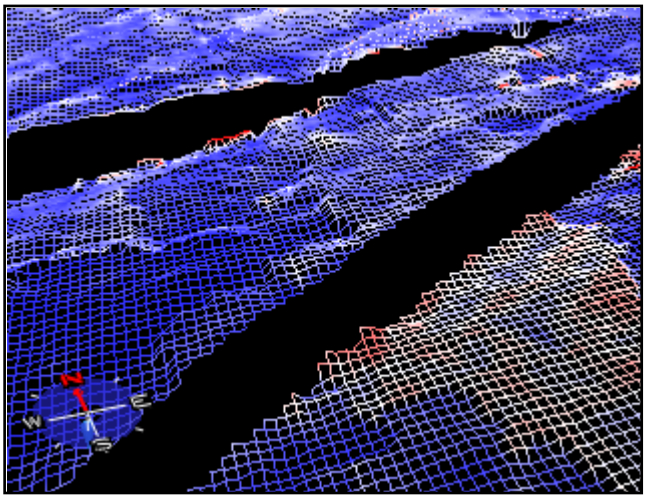
The Horizon Data-Type list will only contain items for which data exists in the Horizon Data-Volume selected for export

Enhanced Horizon Raw Data Display

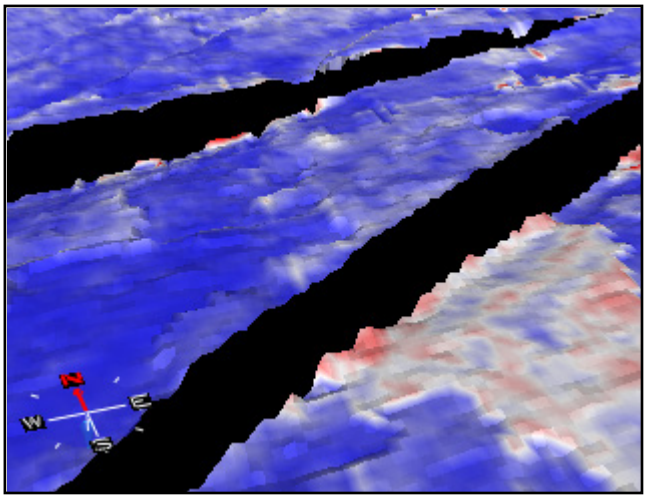
In addition to the introduction of the Horizon Data-Types (above) a new and complimentary display mode for horizon raw data has been added to the Volume Editor - Surface Module style. This option allows areas of contiguous 3D horizon data to displayed as a light-shaded, solid-filled surface.



Surface Module Horizon Raw Data style controls



3D horizon data with solid fill OFF (traditional)



3D horizon data with solid fill ON

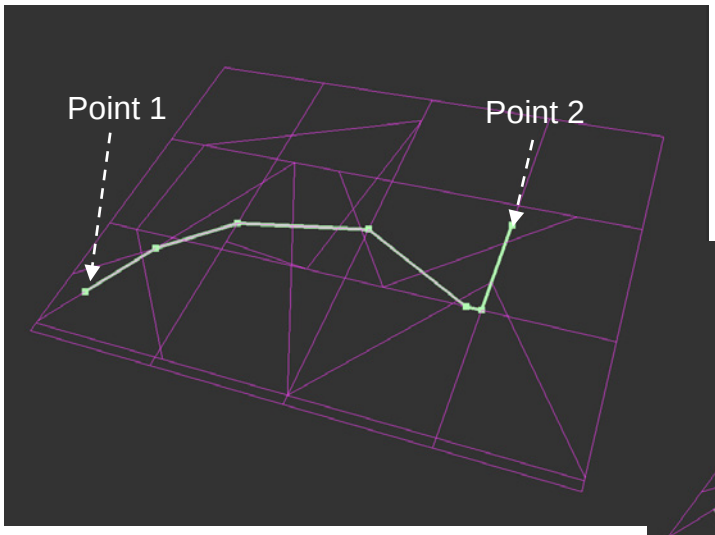
The solid fill option is not applicable to 2D horizon data or point-sets and should not be confused with the conventional horizon surface (tri-mesh) display.

The solid fill option will use all of the contiguous data in the 3D Horizon Data Volumes. In areas where there is little or no contiguous data the solid fill option will result in no output.

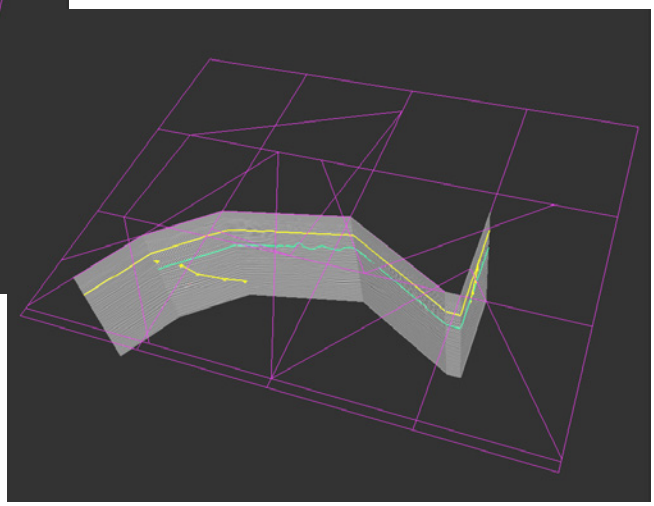
For large 3D horizon data volumes, the solid fill option can be graphically intensive and will have a noticeable impact on display performance.

Composite Section Displays

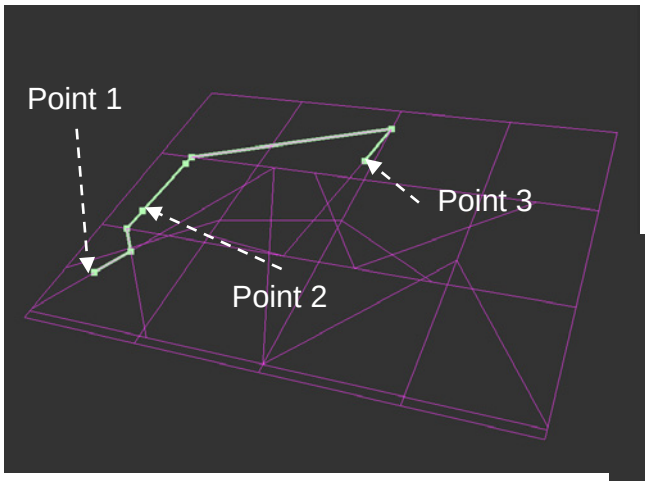
When working with seismic data it is often useful to visualise a number of sections at once in a 3D view. However, when these lines intersect with one-another the area of interest can become obscured by the physical size of all the loaded lines. A new pop-up menu option has been added to the Volume Editor viewer, *"Define composite section"*, which enables the user to enter a mode where parts of many sections can be loaded together. In this new mode, the composite section is defined by a series of pairwise operations (consecutive mouse clicks). For each pair of points, TT will find the optimised route along connected – 2D, 3D or arbitrary - survey lines (i.e. akin to a route-finder). Once finished, the relevant sub-sections are loaded as if they were one continuous section.



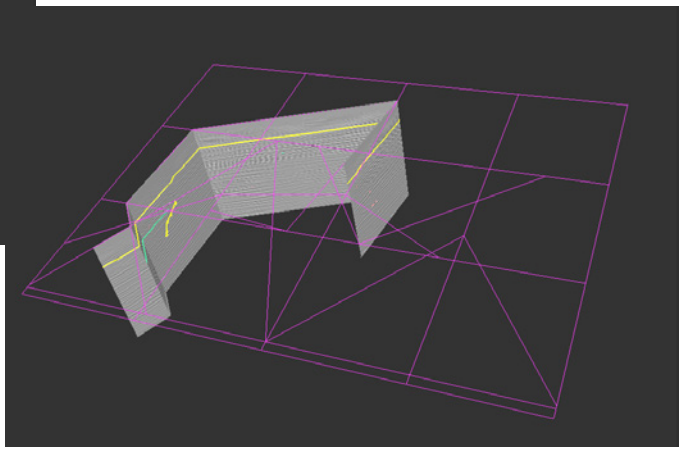
Two points defining the start and end points. The green line represents the best route.



The loaded composite section as defined by the best path between picked points.



Alternatively define the path in smaller increments. Note intermediate points (i.e. those between picks) are also drawn.



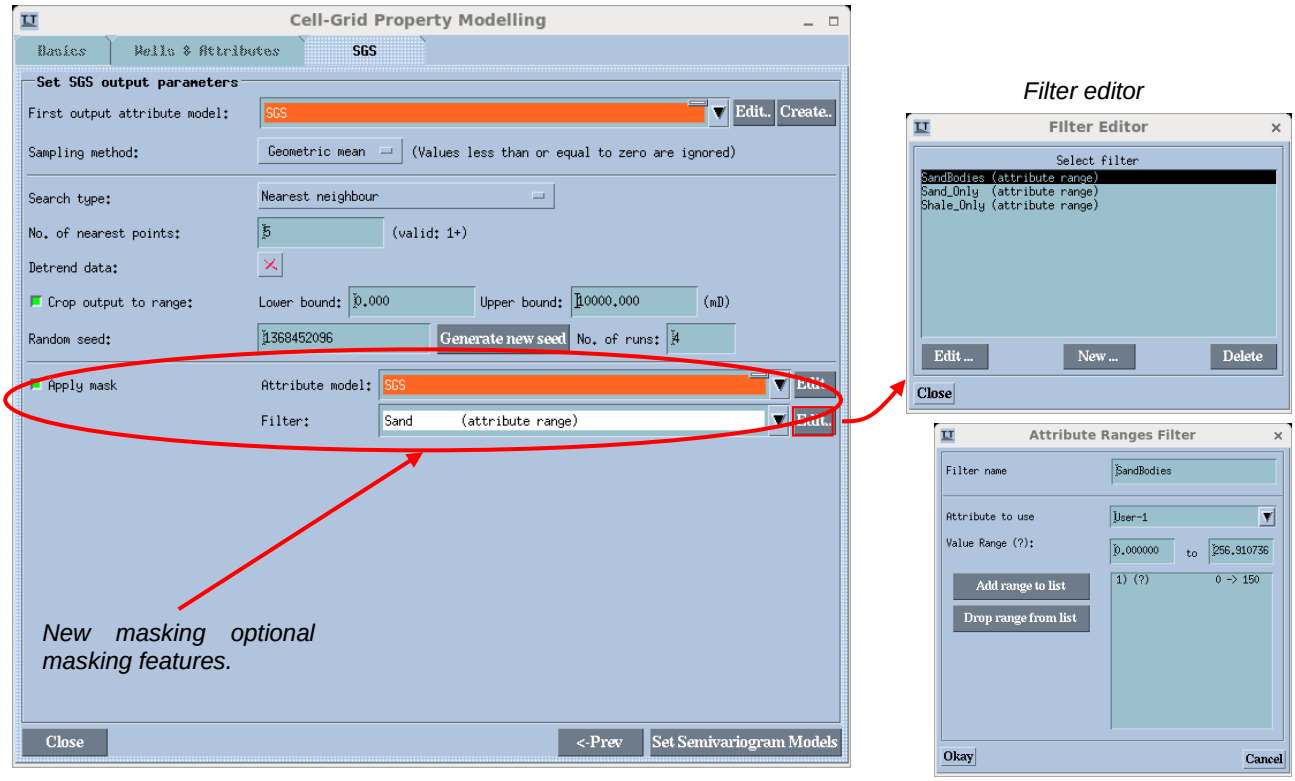
The loaded composite section as defined by the path between picked points.

EarthGrid Property Modelling Update

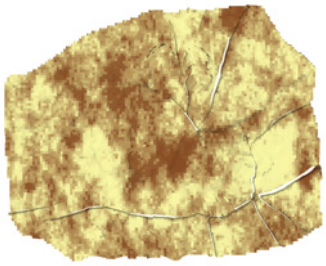
Additional functionality has been added to both the Deterministic and Sequential Gaussian Simulation tools for EarthGrid cellular models.

Model Masks

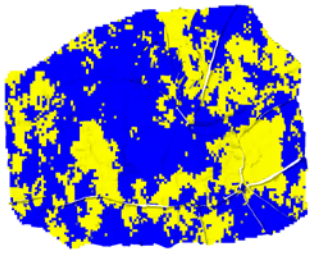
The interpolation and sequential Gaussian simulation tools found in the property modelling toolkit (EarthGrid module), have been extended with additional options to select a mask by means of defining a property model and a property filter. This enables the modelling to be performed according to zones within a geocellular model that share some commonality (e.g. the user may wish to model permeability, first in high V-Shale areas and then low V-Shale areas). The property filter uses the same interface/dialog as the display filter editor found in the display method editor.



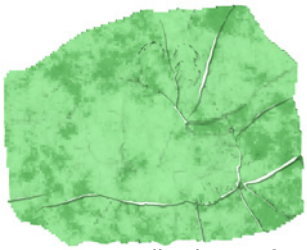
Example



Defining the masking attribute: SGS realisation for VShale.



*The SGS by attribute filter: **where VShale < 0.35 then sand (yellow) else shale (blue).***

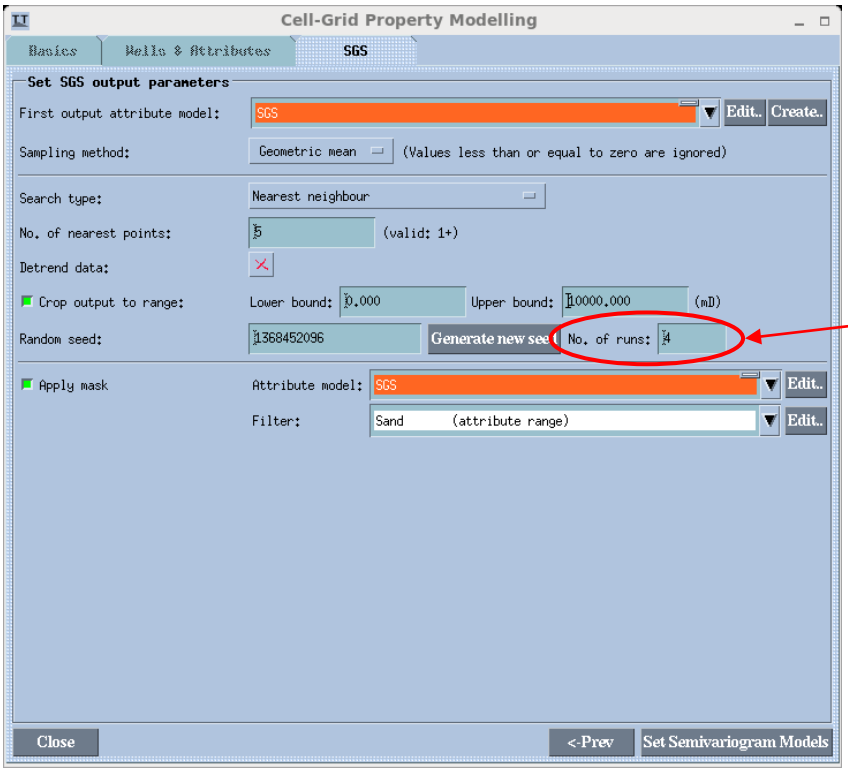


SGS realisation for permeability using no mask .

SGS realisation for permeability using the above mask (SGS with 0.35 cut-off).

Automated multi-SGS runs

The sequential Gaussian simulation (SGS) tool found in the property modelling toolkit (EarthGrid), now has an additional option to set the number of simulation runs. Before, each run would require repeating the same experimental process; now, this need only be done once. Each new simulation is outputted to an automatically created attribute model. The suite of outputs can then be processed in the property modelling tool's calculation tool.

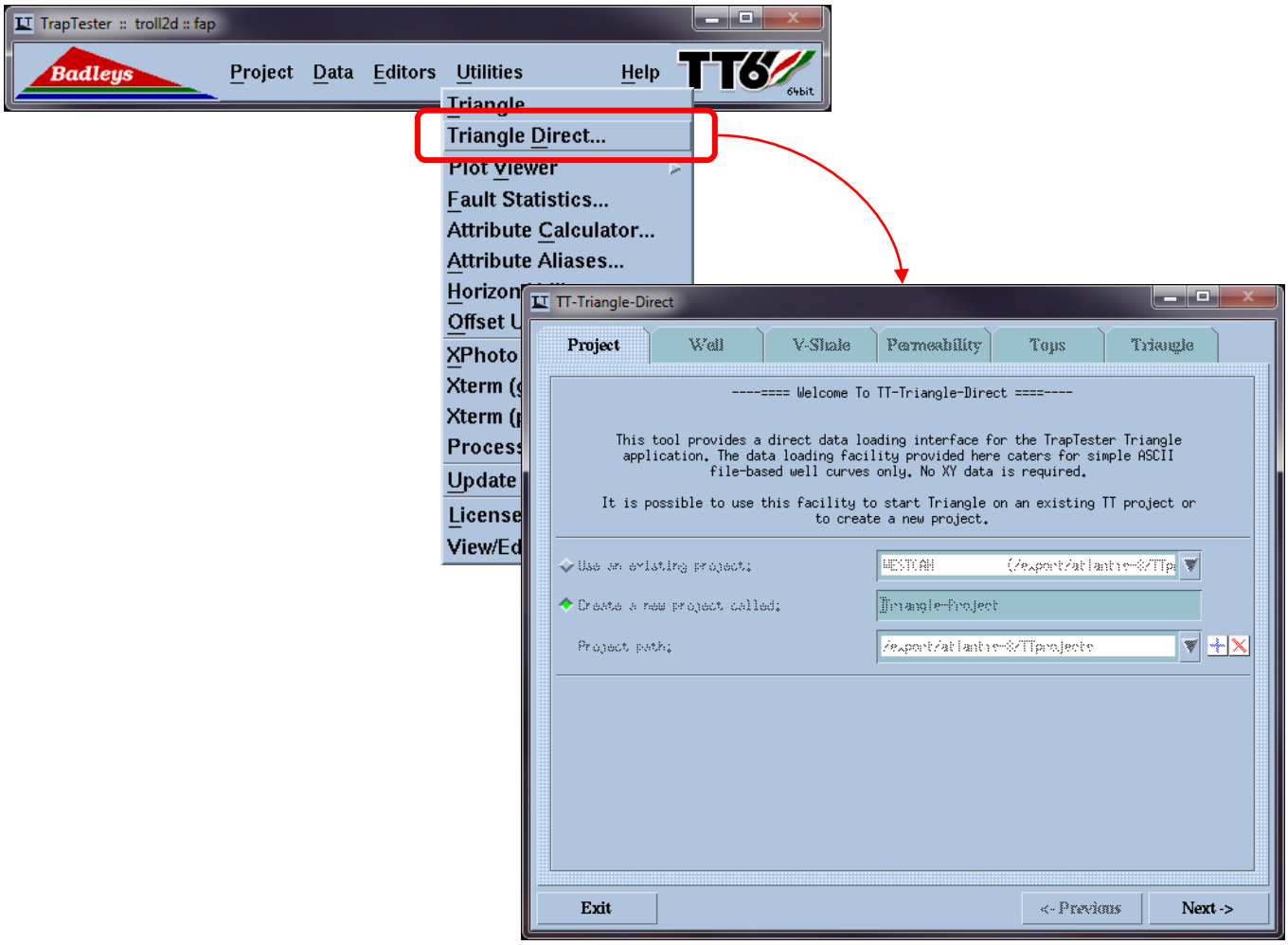


New multi-simulation option.

Triangle-Direct Updates

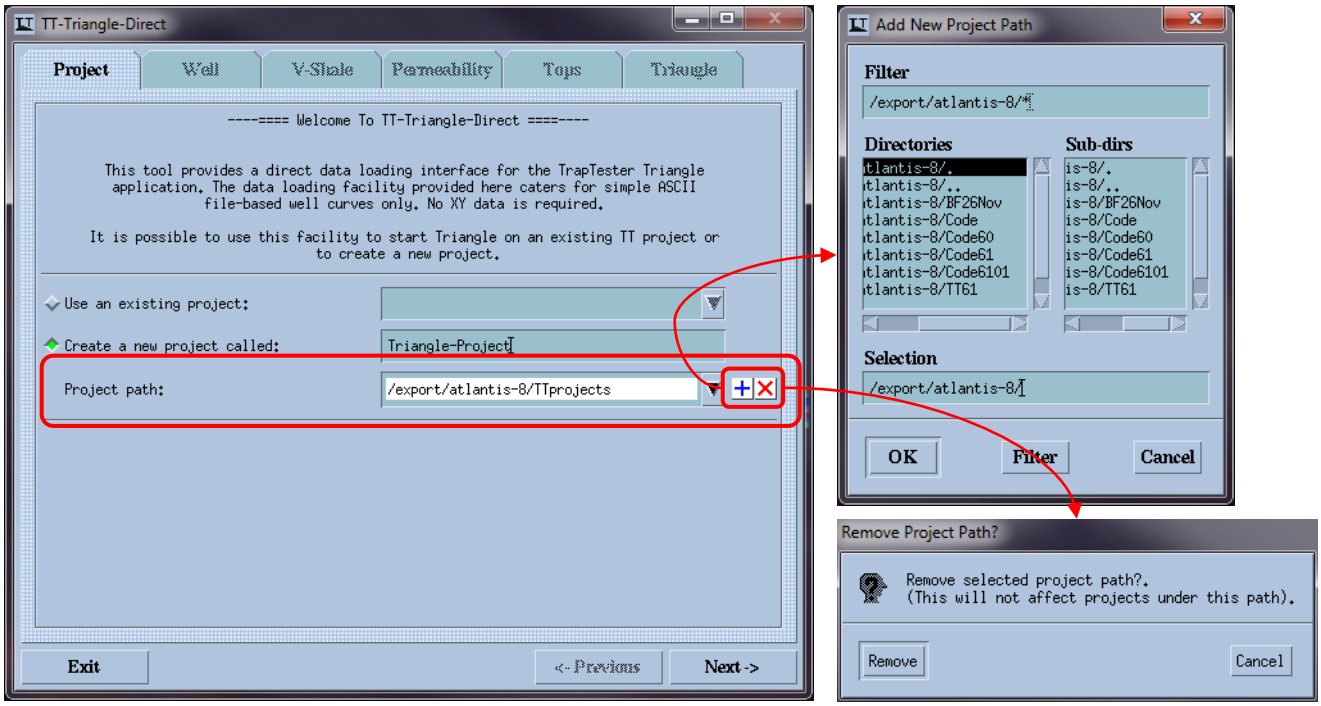
Main Menu Access

The Triangle Direct system, a tool for quickly performing 1D fault seal analysis introduced in TT 6.120, has been added to the main TT Control Menu as a new Utility option. The Triangle Direct option is only available in the Control Menu when a project has been opened. When selected, Triangle Direct will operate within the currently open project and pre-set the project-selection form with details from the current project.



Project Path Control

In order to make Triangle Direct more autonomous with respect to the control of projects it is now possible to manage the TrapTester project path(s) using Triangle Direct. This makes it possible to choose the folder into which a new project is created rather than being restricted to use only those currently under the control of the TrapTester Project Manager.



When using Triangle-Direct to create a new project, the "Project path" in which it will be created can be specified by selection from the drop-list. The "+" and "X" buttons may be used to add a new path and to remove the currently selected path, respectively. The "Add New Project Path" dialog can be used to create new paths if they do not already exist on the file-system.

Well Time-Depth Curve Updates

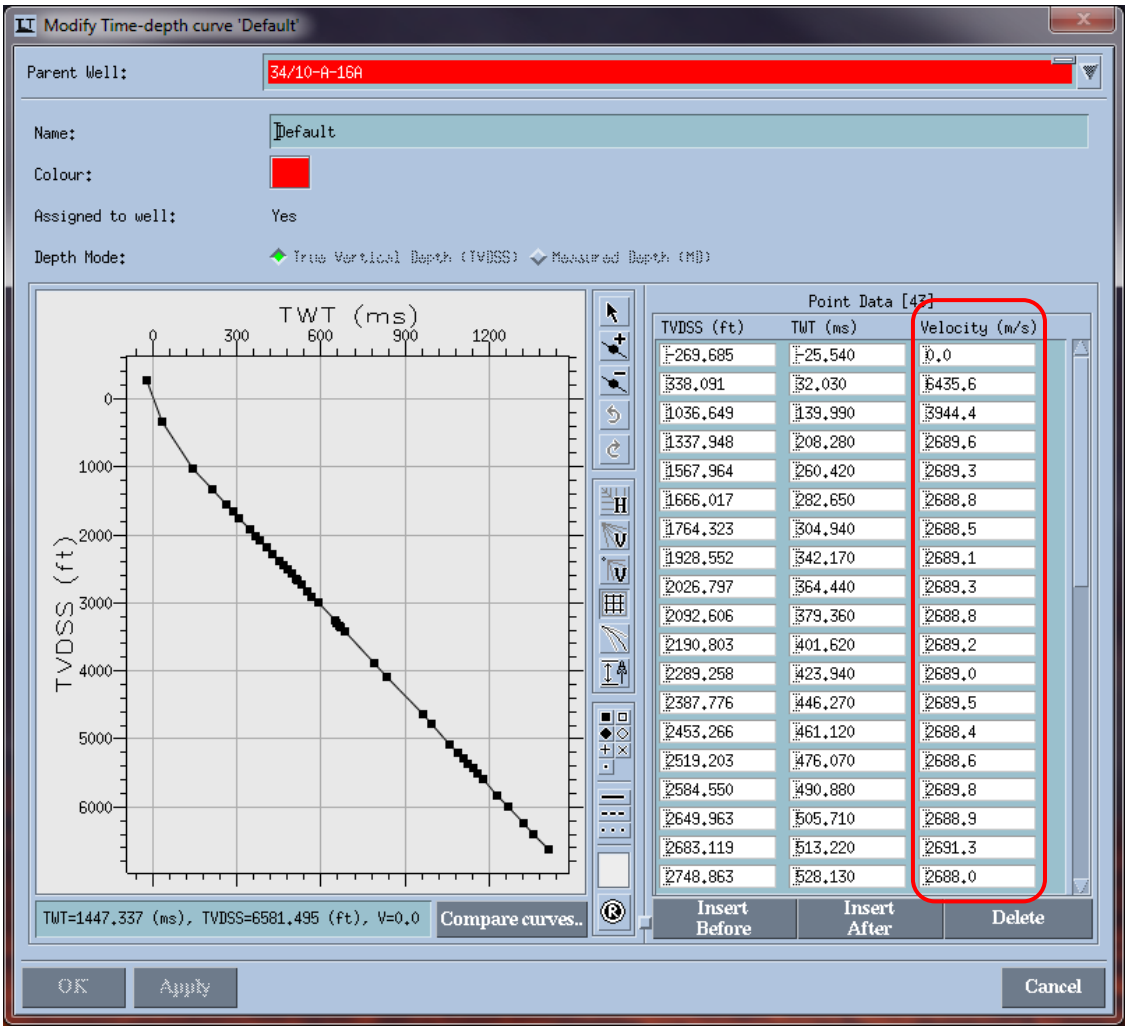
The Well Time-Depth Curve editor has been improved to contain a table of interval velocities alongside the time-depth pairs. The displayed velocities are computed from the pairs of TD values in the table thus:

Depth	TWT (ms)	Velocity (m/s)
D_1	T_1	V_1
D_2	T_2	V_2
D_3	T_3	V_3
...	...	...
D_n	T_n	V_n

where $V_n = 2(D_n - D_{n-1})/(T_n - T_{n-1})$

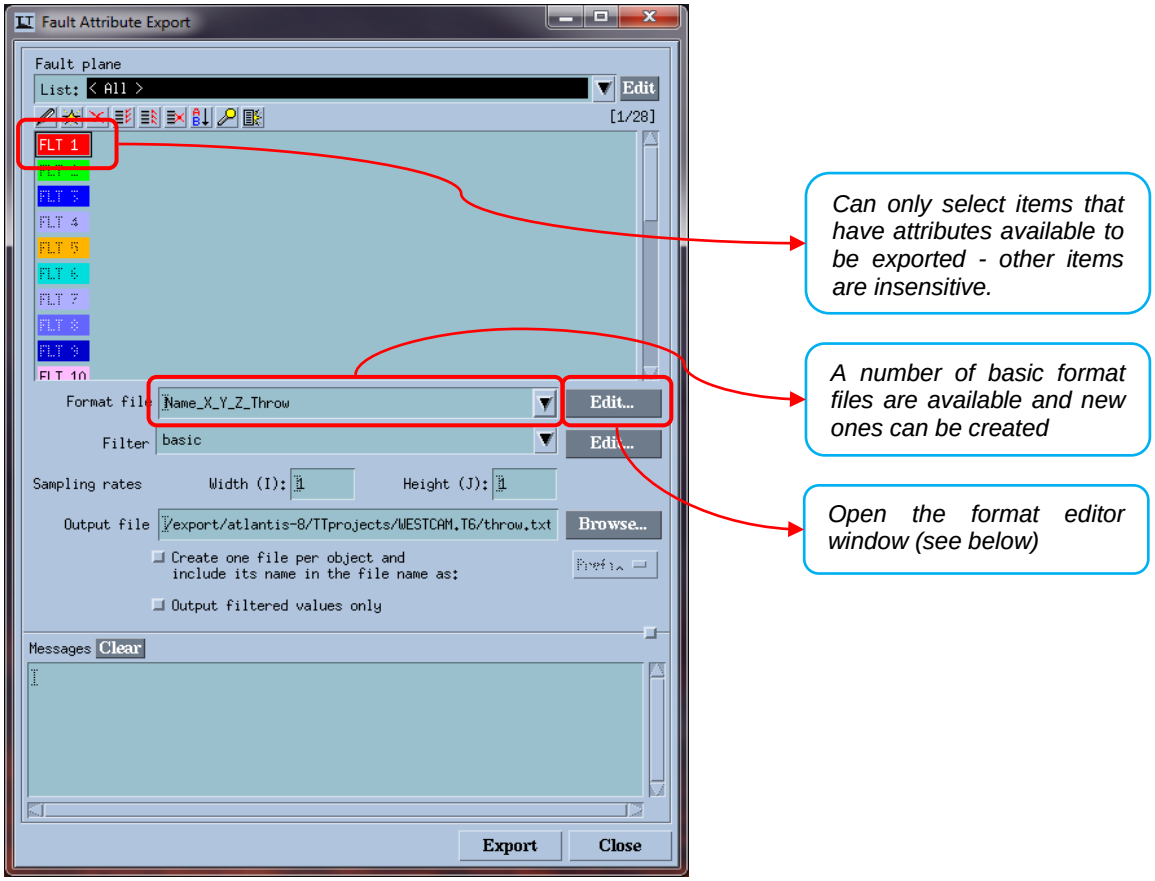
Because the TD-pair used to compute Vn uses the n^{th} and the $n\text{-}1^{th}$ TD values, the value for V_1 (the top item in the table) is meaningless and is set to zero.

The velocity values are editable in the Time-Depth Curve editor table. When a velocity is edited it will update the time value in the same row in the table, leaving the depth value unchanged. The change in the time value will have a knock-on effect on the velocity value for the interval immediately beneath. Hence editing V_n will adjust T_n and V_{n+1}.



Enhanced Task-Based Attribute Export Tool

The fault-surface, horizon-surface, faultED-surface, cell-grid and cell-fault attribute ASCII export tool (accessed from the "*Control Menu->Data*" menu and from the Database Explorer "*File->ASCII Export*" menu) has been re-worked so that it is capable of exporting multiple attributes in a single multi-column export file. The Attribute Export tool now uses an improved version of the "Simple ASCII Export" format controller (used by the discrete fracture and point-set export tools) so that the user has full control of the output file content.

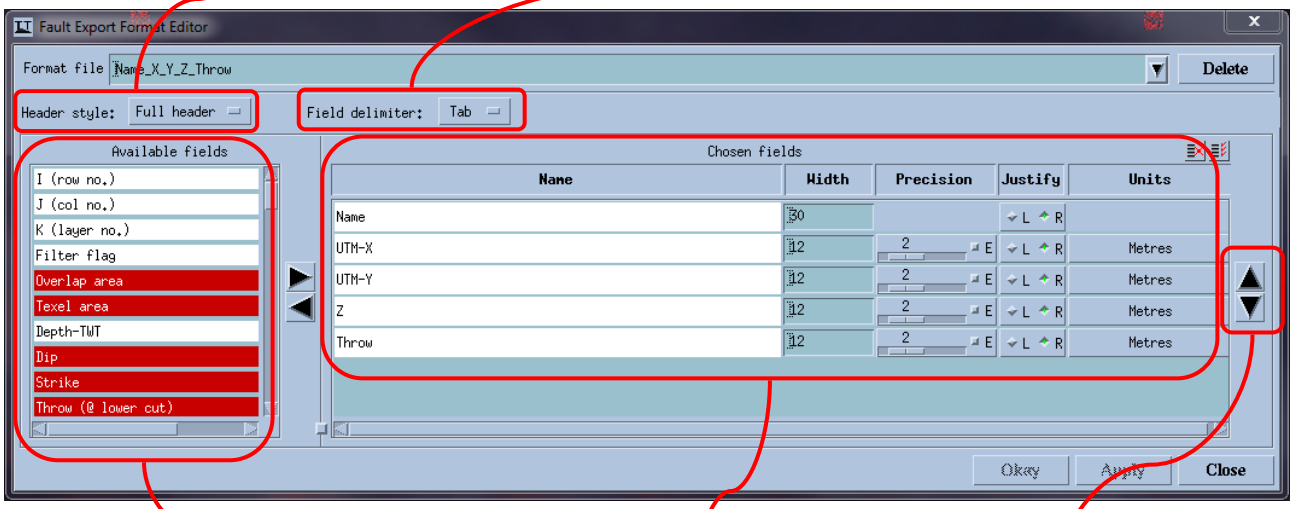


Attribute Export Tool (for Fault Surfaces)

The attribute data that are exported is controlled by the content of the format file. A number of simple format files for some common attributes are provided in the default project templates. Additional formats may be created using the format editor tool which is shown below.

Header style controls the content description information included at the top of each output file. See Example outputs below.

The character to use to delimit fields (columns) in the output files.



The list of data items that can be included as columns in the output file(s). Items shown in red represent data that is not available for export in the current object selection.

List of data items to be included in the output file(s), their format controls and export units (if relevant). Items will be shown in red if data is not available for export in the current object selection.

Move data items up and down in the list to control their column position in the output file(s)

Example output files showing different header options

Full header

```
# Badleys TrapTester ASCII Export
# FIELD POS=1, COLS=1-30, NAME="Name", DOMAIN=Undefined, UNITS=?
# FIELD POS=2, COLS=32-43, NAME="UTM-X", DOMAIN=UTM-X, UNITS=Metres
# FIELD POS=3, COLS=45-56, NAME="UTM-Y", DOMAIN=UTM-Y, UNITS=Metres
# FIELD POS=4, COLS=58-69, NAME="Z", DOMAIN=Z, UNITS=Metres
# FIELD POS=5, COLS=71-82, NAME="Throw", DOMAIN=Z, UNITS=Metres
#                         Name         UTM-X         UTM-Y             Z         Throw
#                                      Metres        Metres        Metres        Metres
                        FLT 1     383502.19      75859.94       8705.72        150.69
                        FLT 1     383508.22      75840.22       8713.75        150.67
                        FLT 1
                        FLT 1
                        FLT 1
                        FLT 1
                        FLT 1
                        FLT 1
                        FLT 1
                        FLT 1
                        FLT 1
"throw.txt" 641567L, 53249922C
```

Short header

```
#                         Name         UTM-X         UTM-Y             Z         Throw
#                                      Metres        Metres        Metres        Metres
                        FLT 1     383502.19      75859.94       8705.72        150.69
                        FLT 1     383508.22      75840.22       8713.75        150.67
                        FLT 1     383514.28      75820.50       8721.78        150.65
                        FLT 1     383520.31      75800.79       8729.80        150.63
                        FLT 1     383526.38      75781.07       8737.83        150.61
                        FLT 1
                        FLT 1
                        FLT 1
                        FLT 1
                        FLT 1
                        FLT 1
                        FLT 1
                        FLT 1
                        FLT 1
                        FLT 1
                        FLT 1
                        FLT 1
"throw.txt" 641561L, 53249563C
```

No header

```
                        FLT 1     383502.19      75859.94       8705.72        150.69
                        FLT 1     383508.22      75840.22       8713.75        150.67
                        FLT 1     383514.28      75820.50       8721.78        150.65
                        FLT 1     383520.31      75800.79       8729.80        150.63
                        FLT 1     383526.38      75781.07       8737.83        150.61
                        FLT 1     383494.81      75936.29       8673.62        150.84
                        FLT 1     383500.88      75916.45       8681.64        150.83
                        FLT 1     383506.97      75896.59       8689.67        150.81
                        FLT 1     383513.06      75876.74       8697.70        150.79
                        FLT 1     383519.12      75857.04       8705.72        150.77
                        FLT 1     383525.12      75837.45       8713.75        150.75
                        FLT 1     383531.19      75817.73       8721.78        150.73
                        FLT 1     383537.22      75798.02       8729.80        150.70
                        FLT 1     383543.28      75778.30       8737.83        150.68
                        FLT 1     383487.38      76012.80       8641.51        150.98
                        FLT 1     383493.47      75992.90       8649.54        150.96
                        FLT 1     383499.56      75973.09       8657.57        150.95
                        FLT 1     383505.66      75953.24       8665.59        150.93
                        FLT 1     383511.75      75933.40       8673.62        150.91
"throw.txt" 641559L, 53249397C                                              5,8           Top
```