



# NEW FEATURES

## T7.3 RELEASE

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# INTRODUCTION

This document describes the new features and enhancements that make up the T7.3 release and differentiate it from the latest T7.2xx releases. T7.3 is distributed as a full release and cannot be installed over a T7.2xx installation as a patch. For a full description of the new features please refer to the relevant sections in the T7 user-manual. This document and the end-user manual uses the term "T7" and "TrapTester" when referring to the current release version of the software.

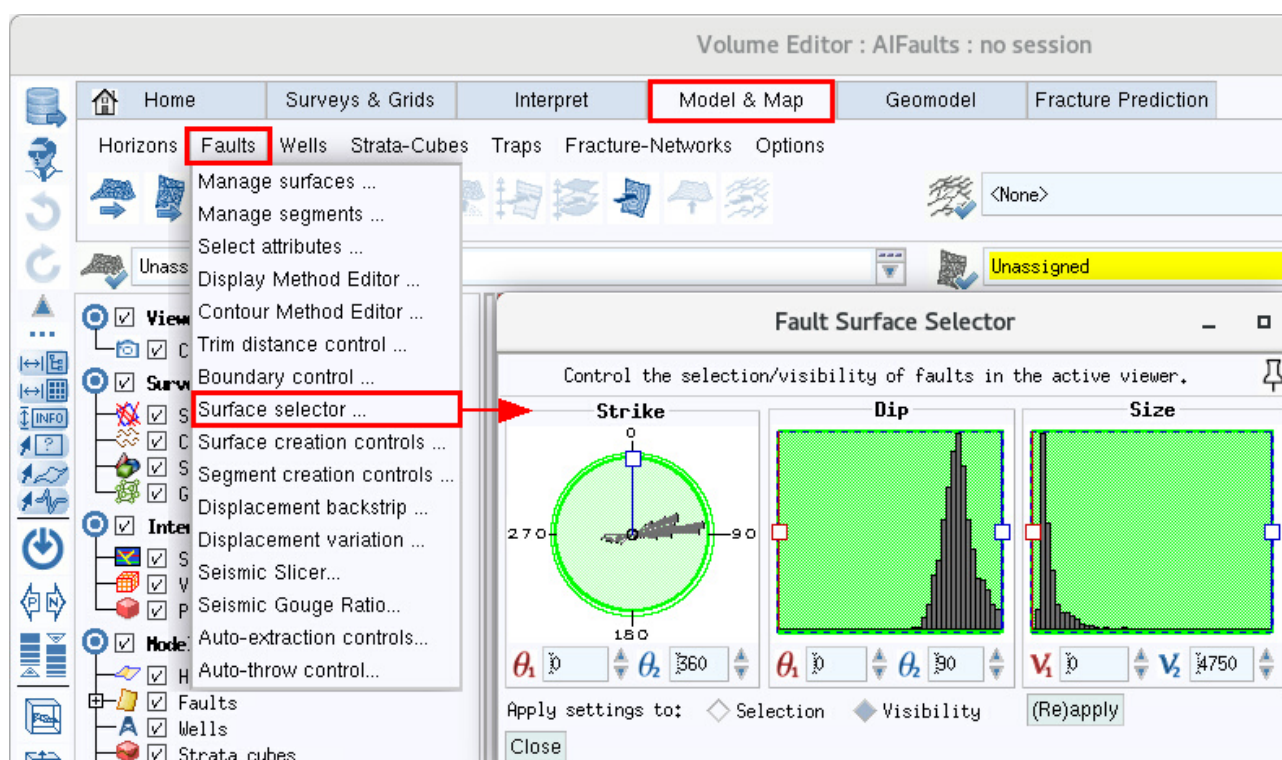
## Important Notes:

- 1) T7 license feature versions are "7.3". T7.3 will not function with a T7.2 (or earlier) license. Please send T7.3 license requests to support@badleys.co.uk.
- 2) T7.3 uses FlexNet 11.18.2 for its licensing. The installation will include the 11.18.2 version of the FlexNet license manager daemon.
- 3) Once installed, T7 will need to run a database upgrade on existing TrapTester projects. **Please backup you projects before using them with T7.3.** Once a project has been upgraded it will not be accessible using T7.2 or earlier.
- 4) After a project has been upgraded, the Volume Editor default shortcut file (defining hotkeys) will be replaced with an updated set of hotkeys and shortcuts. The original shortcut definition file will be renamed to "default.7.2xx".

# MAIN FEATURES

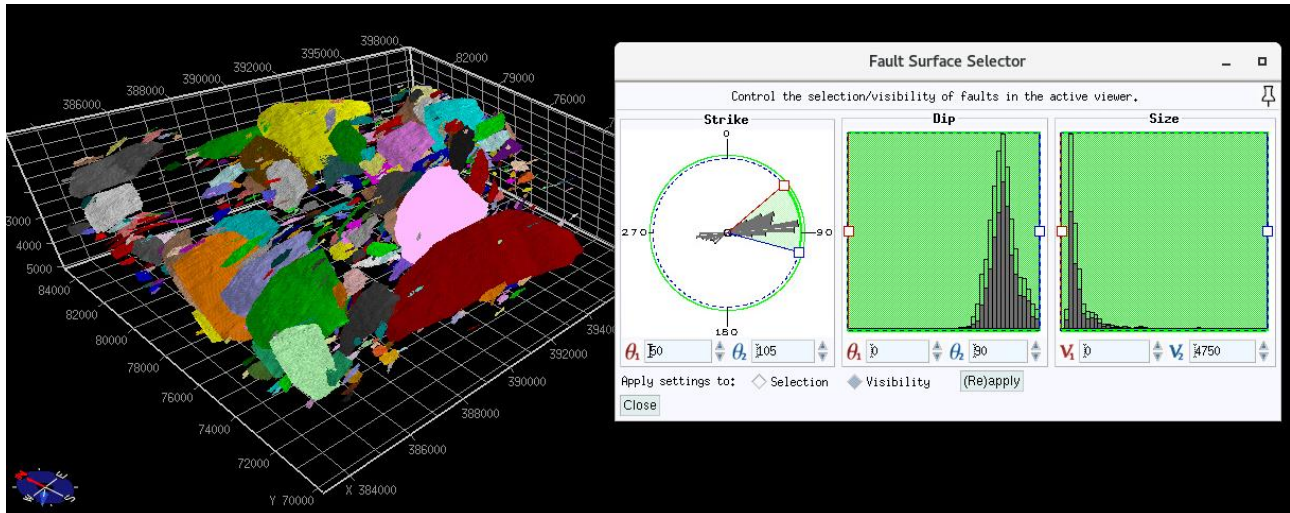
## *Fault Surface Selection Tool*

This new tool, accessed from the Model & Map tab in the Volume Editor, can be used to visualize the distribution of fault surface dip, strike and size and to control the selection or visibility of loaded faults in a given viewer based on any combination of these properties. The tool is particularly useful when dealing with large numbers of faults that have been loaded into the volume editor.

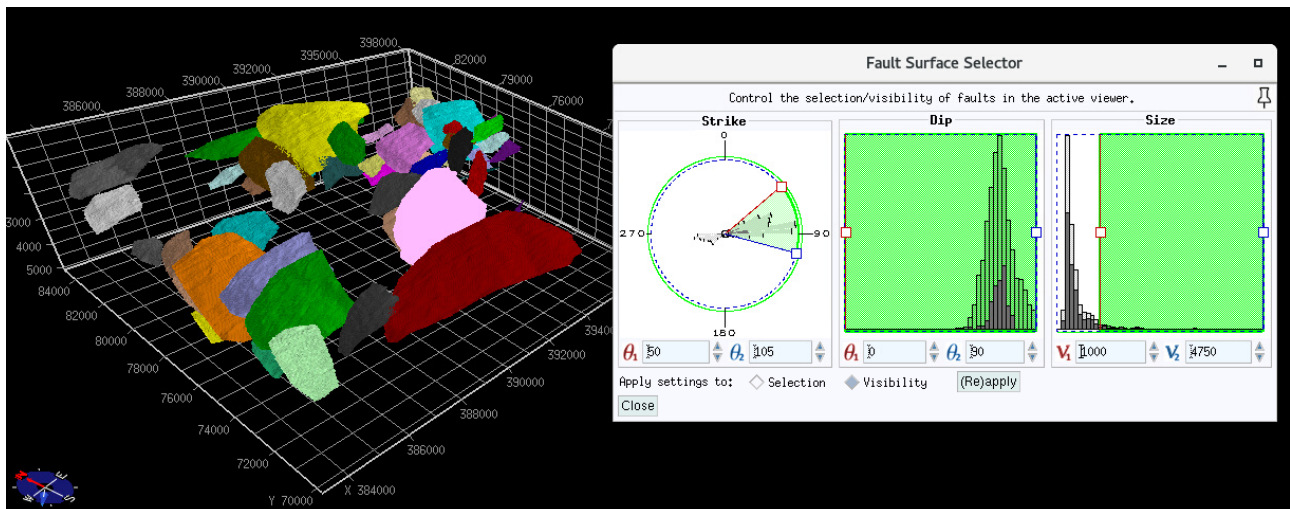


The Fault Surface Selector consists of three graphical tools that summarise the strike, dip and size of all of the faults loaded into the Volume Editor. Each graph contains two interactive handles that can be used to change the “selection” range for their particular property. The selection range is also shown and can be edited using the arrow-boxes beneath each of the plots. As the selection range in any of the graphs is altered, (using <MB1>drag on either of the blue or red handles, or by adjusting the values in the arrow-boxes) the effect is immediately represented in the currently active Volume Editor viewer by updating either the set of visible or the set of selected fault surfaces. Two toggle buttons under the set of graphs control how the selection is applied – to the fault surface selection or to their visibility in the active viewer.

The examples below show the Volume Editor with 1250 faults loaded. The first example shows the Fault Selector set with a strike range of 50 to 105 degrees. Apart from this range representing what faults are visible in the viewer, the effect of this selection can also be seen on the Dip and Size plots – the dark grey region representing the data that remains in the overall selection.



The second example takes the settings from the first example and adjusts the size range to exclude a large proportion of the smaller faults.

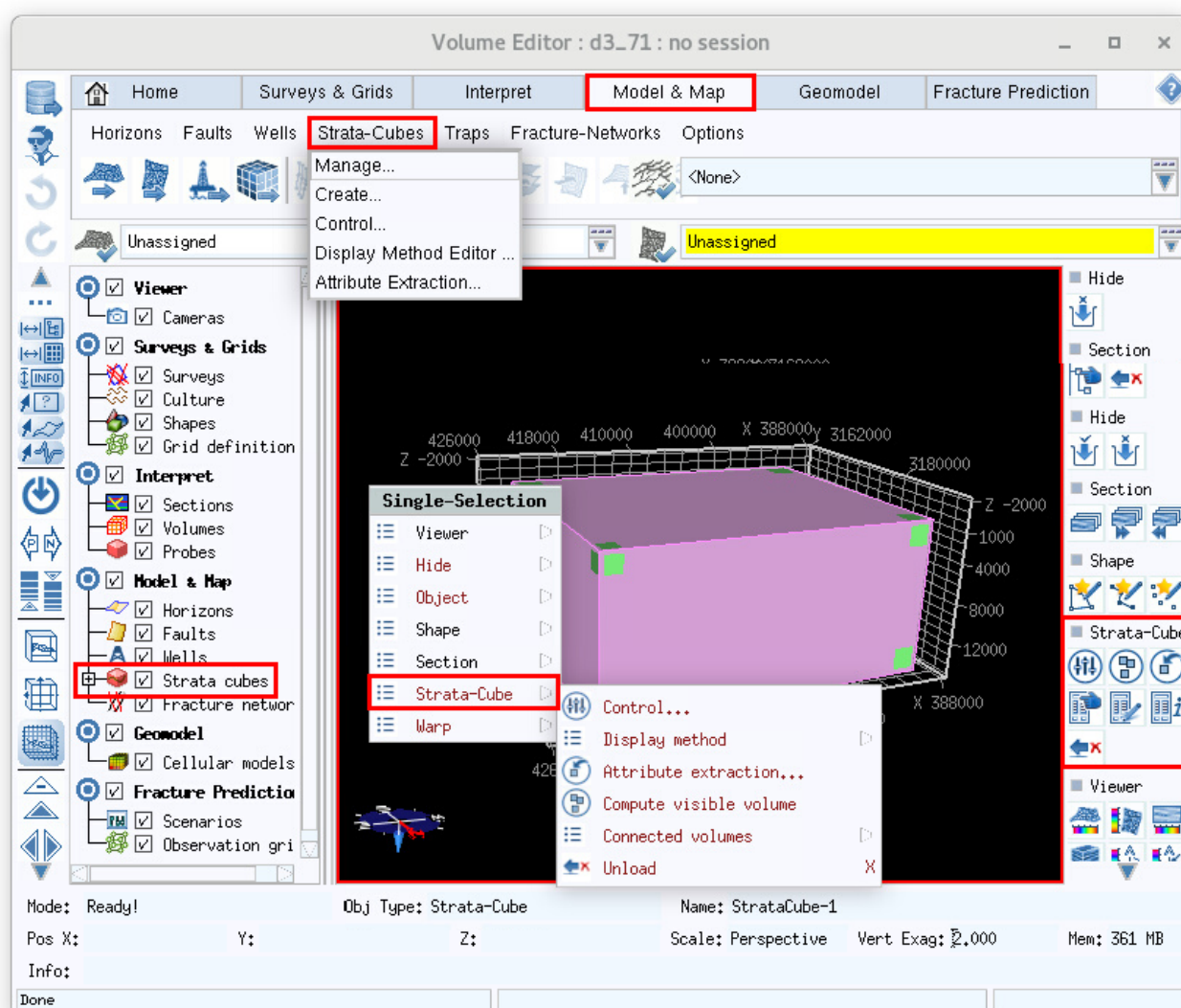




## Strata-Cube Display & Control

Strata-Cubes were first introduced in to T7 in the 7.210 update. Their purpose is to provide a simplified means of managing, manipulating and analysing 3D volumetric data. When initially added to T7 the Strata-Cube functionality was limited to providing a means of applying Attribute Calculator macros to process and create new volume-based attributes according to user-defined processes. Though it has been possible to visualise the content of a Strata-Cube attribute in the Volume Editor in the same way as seismic data, the T7.3 release provides Strata-Cubes with dedicated tools for visualisation and manipulation in that environment. Please refer to the T7.3 reference manual for a full description.

Strata-Cubes are managed under the T7 “task-based” system that is already used for Faults, Horizons, Fracture Networks and a number of other T7 data-types. In this way, the Strata-Cubes can now be loaded in the Volume Editor and display their attributes using Display Methods. The low-level display technology for Strata-Cubes uses an efficient “voxel” rendering process whereby each sample in the Strata-Cube volume is effectively drawn as a cuboid (or voxel). Display Method filters can be used to control which voxels are drawn and provides the user with the ability to see specific data ranges in the volume. The voxel display technique also provides direct information feed-back using the Volume Editor’s <Shift>+MB1 inquiry function.



*Strata-Cube management & controls in the Volume Editor*

Strata-Cubes are controlled through a dedicated menu in the Volume Editor's *Model & Map* tab (as shown in the above image) and also through selection-based options in the <MB3>Popup Menu, tree-view and context toolbar. The various options are outlined below.

### MAIN STRATA-CUBE MENU OPTIONS

**Manage** – opens the Data Manager window for loading and unloading Strata-Cubes

**Create** – opens an interactive tool and window for creating a new Strata-Cube

**Control** – opens the Strata-Cube Control window

**Display Method Editor** – opens the Display Method Editor for the Strata-Cube task.

**Attribute Extraction** – opens a tool for various attribute extraction processes

### FURTHER OPTIONS IN THE <MB3>POPUP MENU

**Control** - opens the Strata-Cube Control window

**Display Method** – options for selecting and editing Display Methods

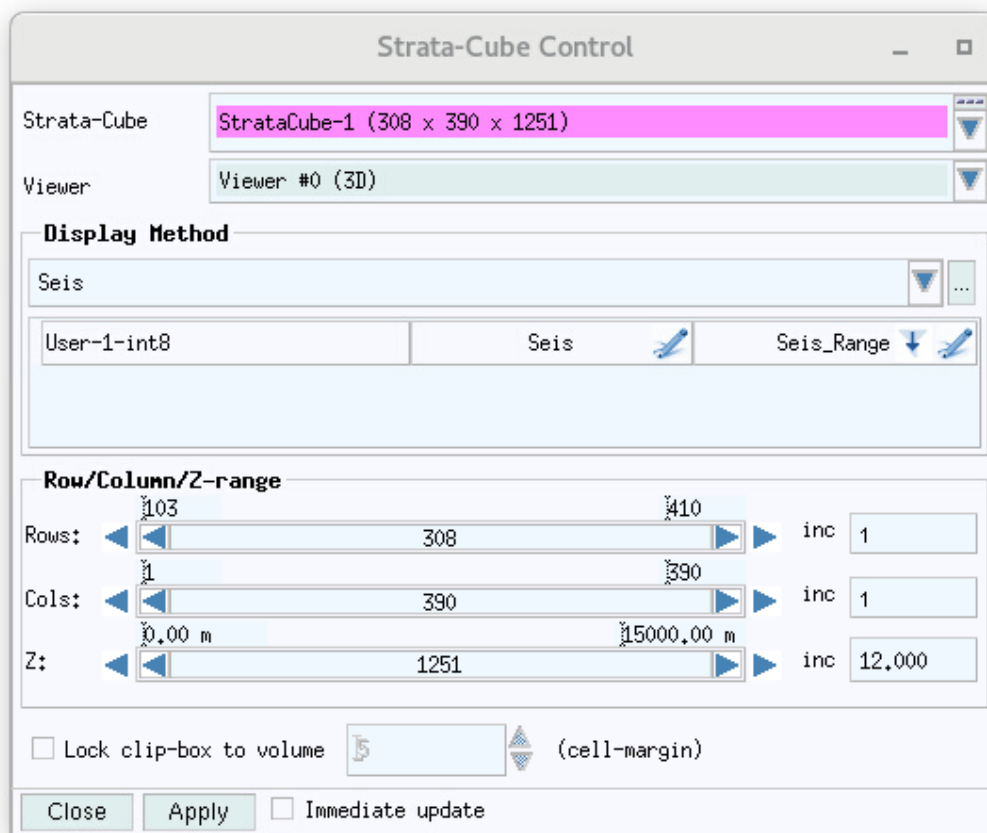
**Attribute Extraction** – opens a tool for various attribute extraction processes

**Compute visible volume** – Computes and reports the volume of all visible voxels

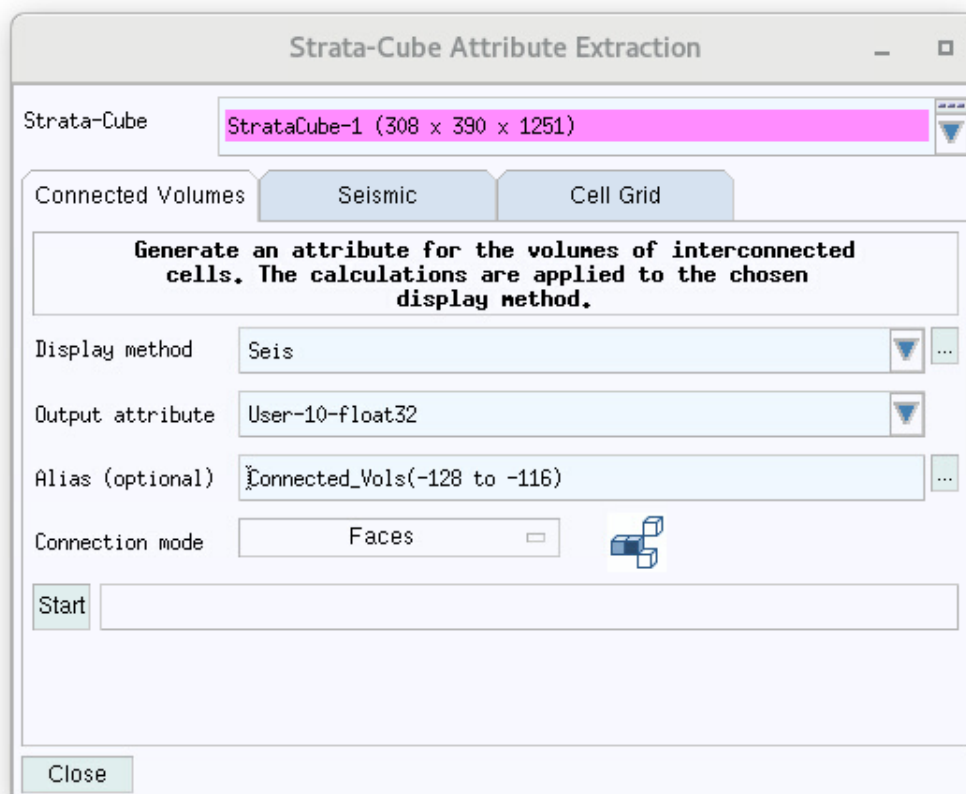
**Connected volumes** – various options for selecting and displaying connected voxels

**Unload** – unload selected Strata-Cubes

### STRATA-CUBE CONTROL WINDOW

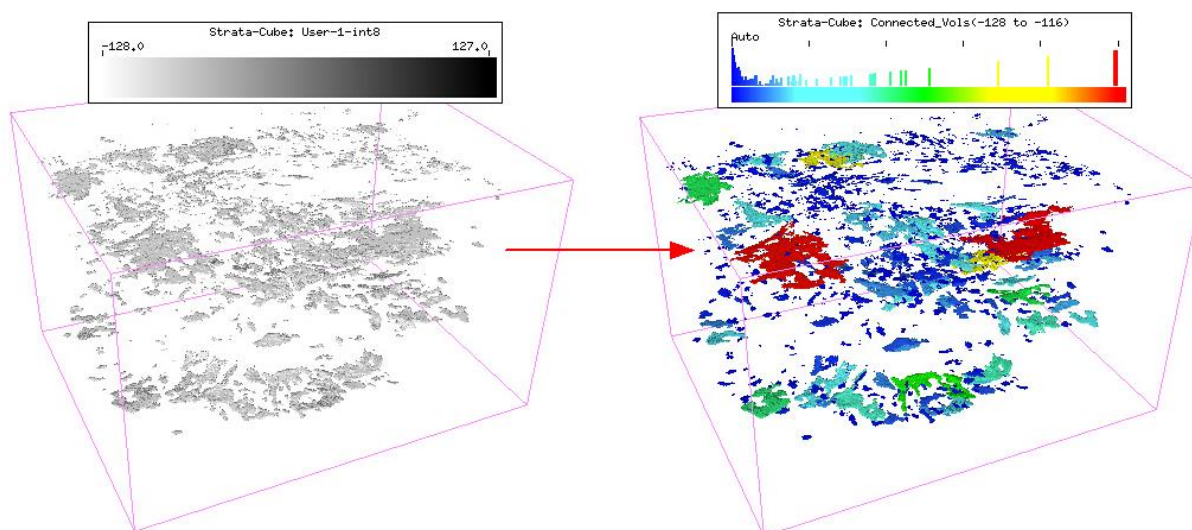


The Strata-Cube Control window is a facility to set specific settings on a displayed Strata-Cube. A Display Method can be chosen and the Row/Column/Z-ranges can be set.

**ATTRIBUTE EXTRACTION**

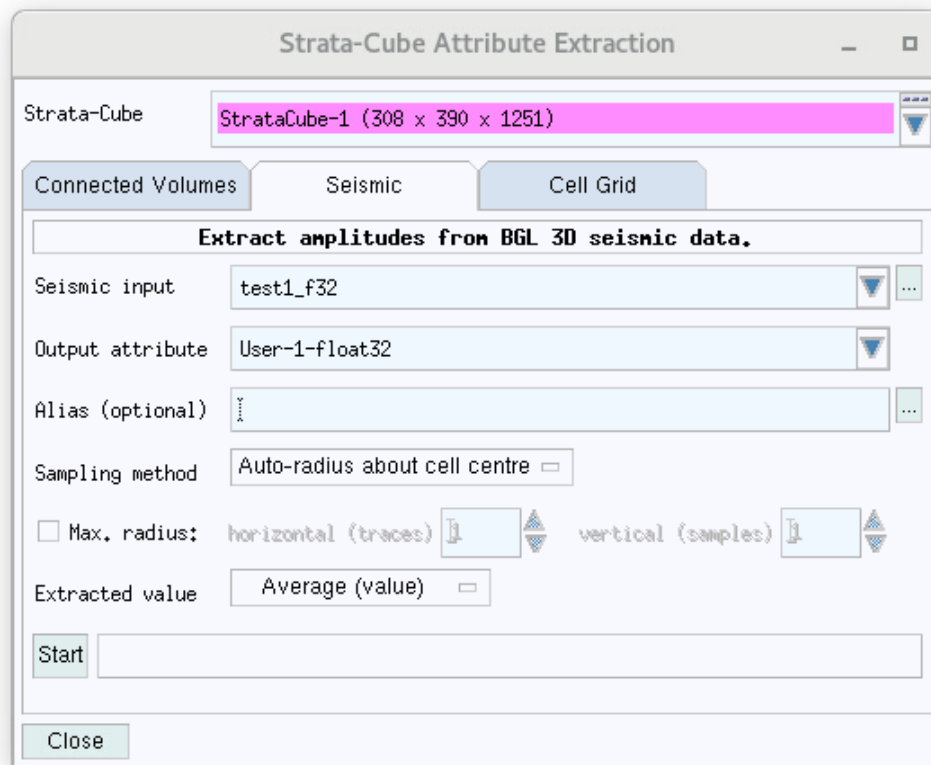
The Strata-Cube Attribute Extraction tool permits Strata-Cube attributes to be extracted from various sources.

- a) **Connected Volumes** – generate an attribute based on volumes of connected Strata-Cube voxels that are defined by a chosen Display Method.

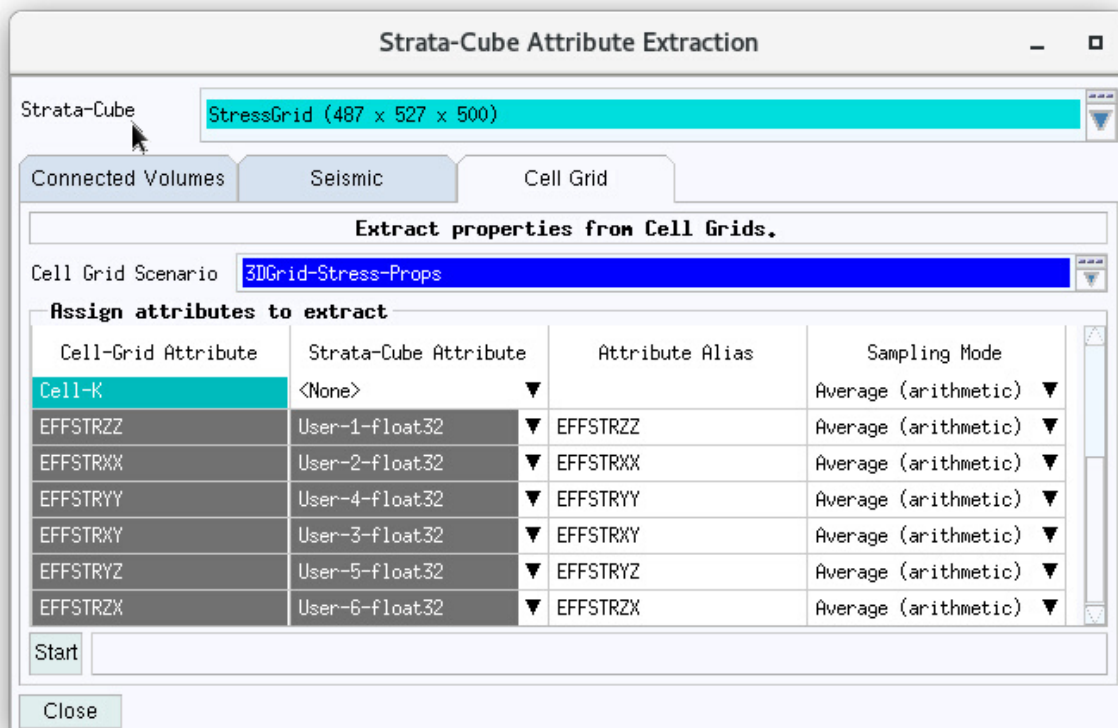


8bit seismic filtered to show amplitudes -128 to -116. Connected volumes extracted & coloured by volume.

- a) **Seismic** – generate an attribute by sampling from a seismic volume



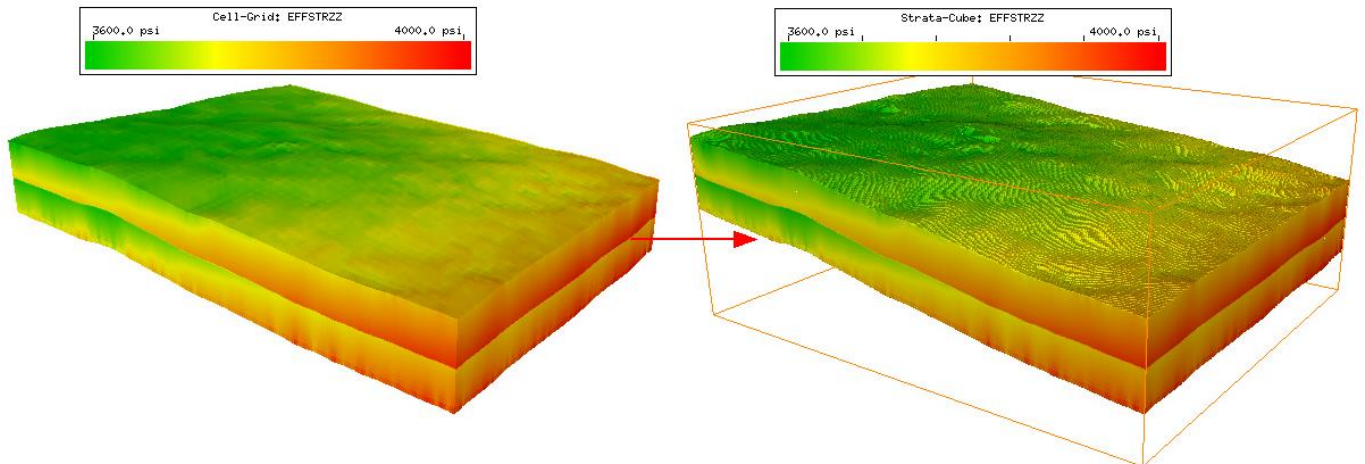
- b) **Cell Grid** – generate attributes by sampling properties from a Cell-Grid



In the above example, effective directional stress Cell-Grid properties are selected for extraction as Strata-Cube user attributes with aliases set to reflect the original attribute names. Multiple attributes can be selected for extraction. The image below shows the



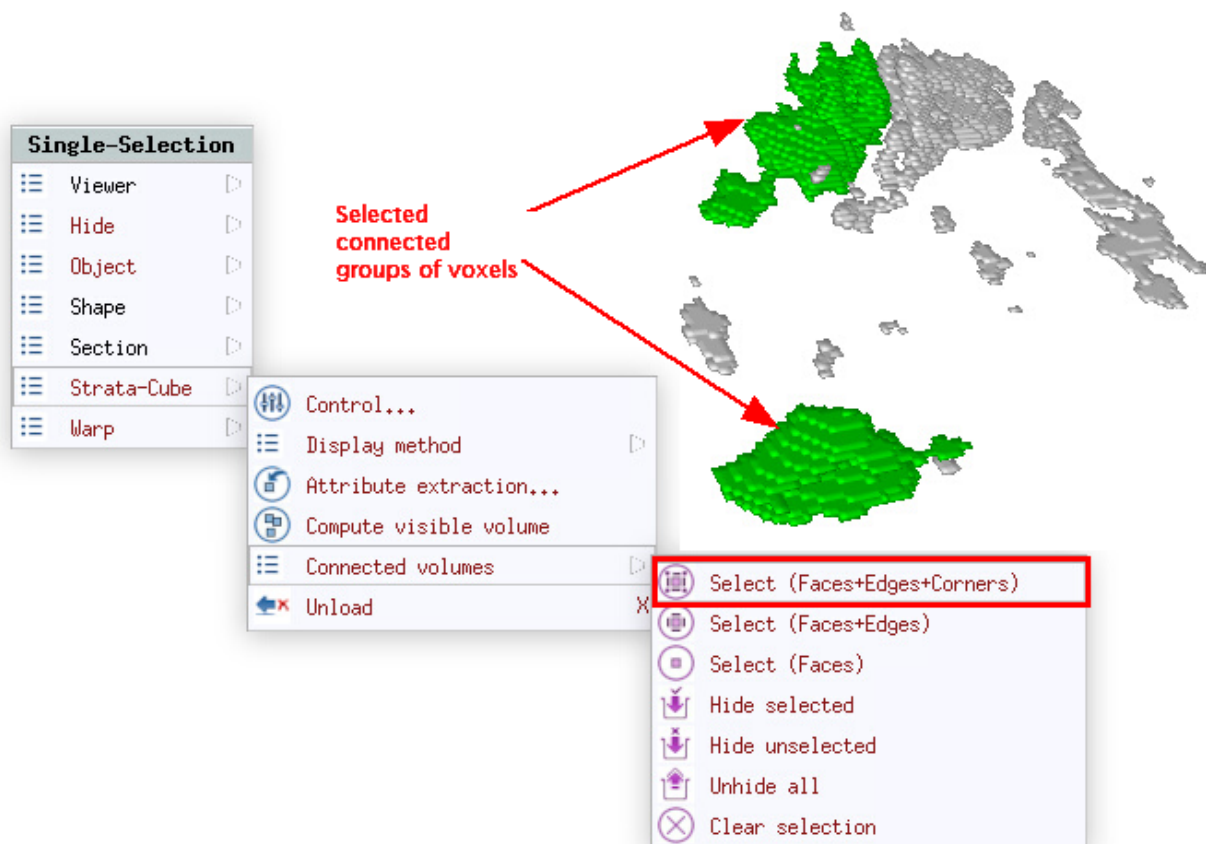
vertical stress component attribute (EFFSTRZZ) mapped on to the Cell-Grid and the results of the extraction to the Strata-Cube.



Strata-Cube principal stress attributes can be used as input into the T7 3D Stress Scenario and used for present day stress analysis work-flows.

### Connected Volumes Options

When a Strata-Cube is set with a Display Method it is possible to access the Connected Volumes options via the <MB3> Popup Menu.



These options permit the selection and high-light of discrete connected volumes so that those groups of connected voxels may be shown in isolation (Hide unselected) or hidden from view (Hide selected). The total volume of the connected regions is reported in the Volume Editor's information area and Messages Window.

## Strata-Cube Volume-Based Inputs to 3D-Stress Scenarios

The 3D Stress Analysis toolkit in T7 has been enhanced to permit any of its inputs to be defined by Strata-Cube volume attributes. Up until this release the 3D Stress Scenario required its inputs to be defined either by basic 1D controls or by curves (supplied in the form of Borehole Stress data) sourced from well logs.

Stress scenario: StressScenario#0 (active) UID: 0, Index: 0

Name & Colour: StressScenario#0

☒ Set as 'Active' Scenario

Inputs: ☐ Use Borehole Stress data Z-slice interval: 100,000 (m) ☒ Use Strata-Cube Data

Fault options: ☐ Use Pressure Profiles where defined ☐ Vary static friction with SGR where possible

Horizon options: ☒ Enable 'SH' trajectory creation Spacing: 200,00 (m)

Summary 1D Stress Controls										
	TVDSS (m)	Sv (psi)	Sh (psi)	SH (psi)	SH-Azi (deg)	Pf (MPa)	Biot (")	Coh (psi)	mu-Int (")	mu-Stat (")
Z-Min	0,000	0	0	0	0,00	0,000000	1,00000	798	0,75000	0,60000
Grad.		1,740	0,580	1,160	0,000	0,000000	0,00000	0,000	0,00000	0,00000
Z-Max	2500,000	4351	1450	2901	0,00	0,000000	1,00000	798	0,75000	0,60000

Strata-Cube: StressGrid (487 x 527 x 500)

Attribute Volume Assignment		Units (as stored)
Sv	Sv (Vertical Stress)	Pascals
Sh	Sh-min (Min. Horizontal Stress)	Pascals
SH	Sh-max (Max. Horizontal Stress)	Pascals
SH-Azi	Sh-azi (Azimuth of Sh-max)	Radians
Pf	<None>	Pascals
Biot	<None>	Unitless
Coh	<None>	Pascals
mu-Int	<None>	Unitless
mu-Stat	<None>	Unitless

The option, "Use Strata-Cube Data" can be used in combination with the option "Use Borehole Stress Data" or in combination with the "Summary 1D Stress Controls". When enabled, the "Strata-Cube Selection" tab is made available where the user can choose a Strata-Cube and define which of its attributes to use. It is possible to select Strata-Cube attributes for any combination of the Stress Scenario input components. Any input component set to use a Strata-Cube attribute will use this in preference to any other source of that component data defined in the Scenario (ie Borehole Stress Data or the Summary 1D Stress Controls).

In the above example, The principal stress inputs, Sv, Sh-min, Sh-max and Sh-Azi are each set to use data from an appropriate Strata-Cube attribute while the inputs for the remaining 5 components (Pf, Biot, Coh, mu-Int, mu-Stat) are handled through the Summary 1D Stress Controls.

Strata-Cube attributes can be sourced from any of the following:

- BGL 3D seismic or property volumes (by direct linking or attribute extraction)
- Attribute Calculator (by processing other Strata-Cube attributes)
- Cell Grids (by attribute extraction)

## ***Present-Day Stress Attributes for FaultED Observation Surfaces***

In combination with an active Stress Scenario, the FaultED Fracture Prediction system now has the capability of computing a number of present-day stress attributes on observation surfaces defined by the FaultED scenario. The following list of attributes may be selected in the Project Parameters (each attribute listed has a corresponding azimuth attribute that may be independently selected and also controls the computation of related "Field-Line" attributes -see below):-

- Max slip tendency (Coulomb)
- Min slip tendency (Coulomb)
- Max dilation tendency (Coulomb)
- Min dilation tendency (Coulomb)
- Slip tendency (S2)
- Dilation tendency (S2)
- Slip tendency (S3)
- Dilation tendency (S3)
- Max slip tendency (S2+S3)
- Max slip tendency (S2+Coulomb)
- Max slip tendency (S3+Coulomb)
- Max slip tendency (S2+S3+Coulomb)
- Max dilation tendency (S2+S3)
- Max dilation tendency (S2+Coulomb)
- Max dilation tendency (S3+Coulomb)
- Max dilation tendency (S2+S3+Coulomb)
- Max slip+dilation tendency (S2)
- Max slip+dilation tendency (S3)
- Max slip+dilation tendency (Coulomb)
- Max slip+dilation tendency (S2+S3)
- Max slip+dilation tendency (S2+Coulomb)
- Max slip+dilation tendency (S3+Coulomb)
- Max slip+dilation tendency (S2+S3+Coulomb)

The properties are computed for both horizon and grid-based observation surfaces. Once computed these can be:

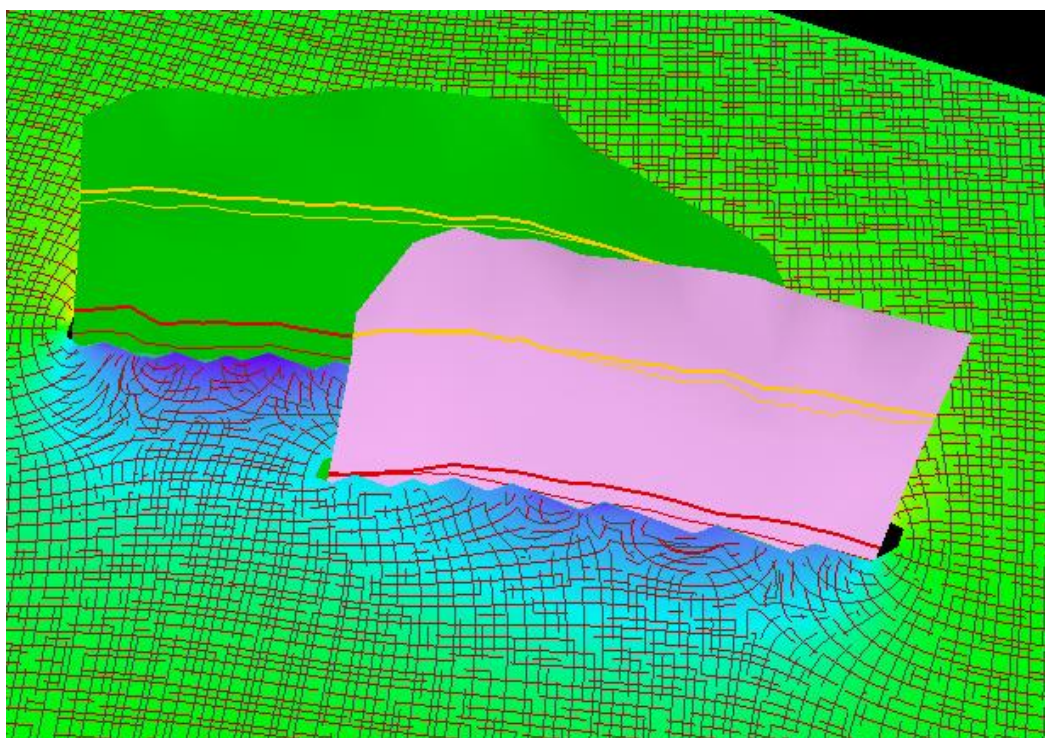
- Displayed as surface attributes in the Volume Editor.
- Used in the Attribute Calculator as a basis for computing user-defined attributes.
- Plotted against other attributes using the Plot-Viewer utility
- Exported as ASCII data
- Exported to Petrel (using the direct link)

## **Field-Line Attributes**

Each of the above attributes has a corresponding “Field-Line” attribute that is only computed if its associated surface attribute is selected for computation.

These new attributes, controlled through the Volume Editor Style settings, provide a powerful means of visualising the trends of fracture-related surfaces as intersection lines on the observation surfaces. The line sets fall into two categories.

First, as an addition to the standard mechanical information, the expression of the S1, S2 and S3 principal planes as field lines give a useful and intuitive visualization of the FaultED stress field. They also represent the orientations of (potential) opening-mode fractures with S3 planes representing the primary and S2 the secondary fracture or joint sets.



*S2 & S3 principal plane field-lines (surface coloured by depth)*

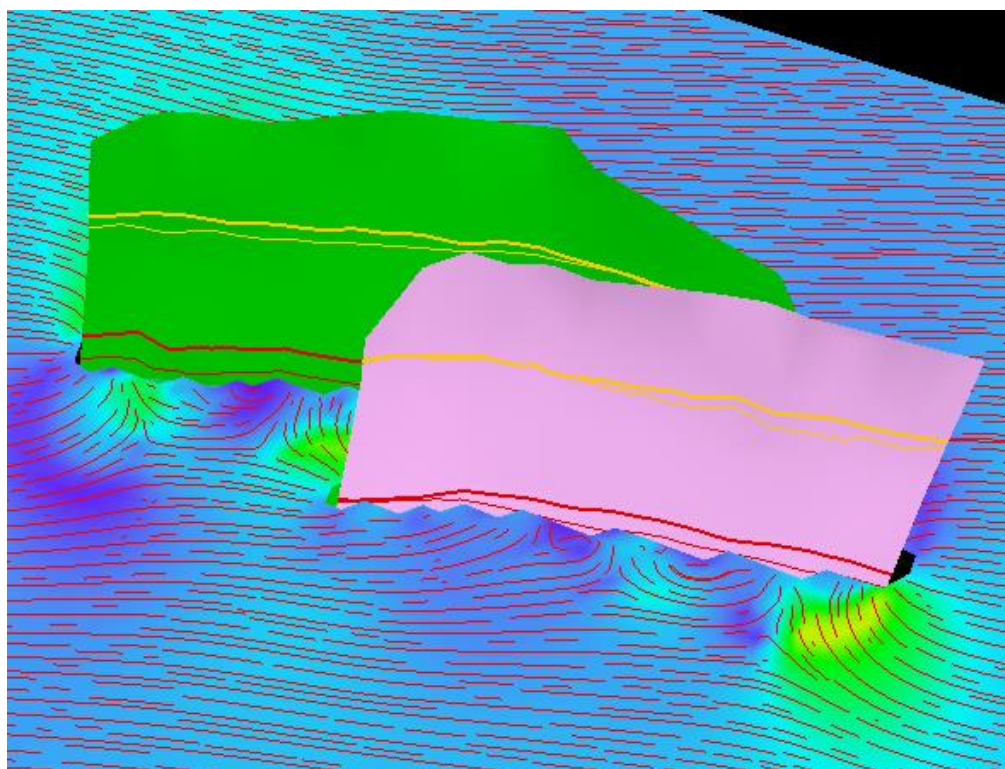
Second, if a present-day Stress Scenario is active and a corresponding FaultED surface property has been selected for computation in the Project Parameters, then Field Lines attribute(s) are also computed for those properties that represent the lines of intersection between potential fracture planes and the observation surface to which they relate. Although these are not strictly "field lines" they are characterized as such by analogy with S1, etc. (above). The maximum slip and/or dilation tendency Filed Lines can help visualize potential hydraulic conductivity paths along the most dilation and/or slip prone fracture orientations .



The following Field-Line attributes relating to the present-day stress-field may be computed:

- Max slip tendency field-lines (Coulomb)
- Min slip tendency field-lines (Coulomb)
- Max slip tendency field lines (S2+S3)
- Max slip tendency field lines (S2+Coulomb)
- Max slip tendency field lines (S3+Coulomb)
- Max slip tendency field lines (S2+S3+Coulomb)
- Max dilation tendency field-lines (Coulomb)
- Min dilation tendency field-lines (Coulomb)
- Max dilation tendency field lines (S2+S3)
- Max dilation tendency field lines (S2+Coulomb)
- Max dilation tendency field lines (S3+Coulomb)
- Max dilation tendency field lines (S2+S3+Coulomb)
- Max slip+dilation tendency (S2)
- Max slip+dilation tendency (S3)
- Max slip+dilation tendency (Coulomb)
- Max slip+dilation tendency (S2+S3)
- Max slip+dilation tendency (S2+Coulomb)
- Max slip+dilation tendency (S3+Coulomb)
- Max slip+dilation tendency (S2+S3+Coulomb)

Each of the above field-line attributes will only be computed if one of its corresponding grid-based attributes is selected for computation in the Project Parameters – for example, the “Max slip tendency field-lines (Coulomb)” Field Lines will be computed if either “Max slip tendency (Coulomb)” or “Azimuth of max slip tendency (Coulomb)” are selected for computation.



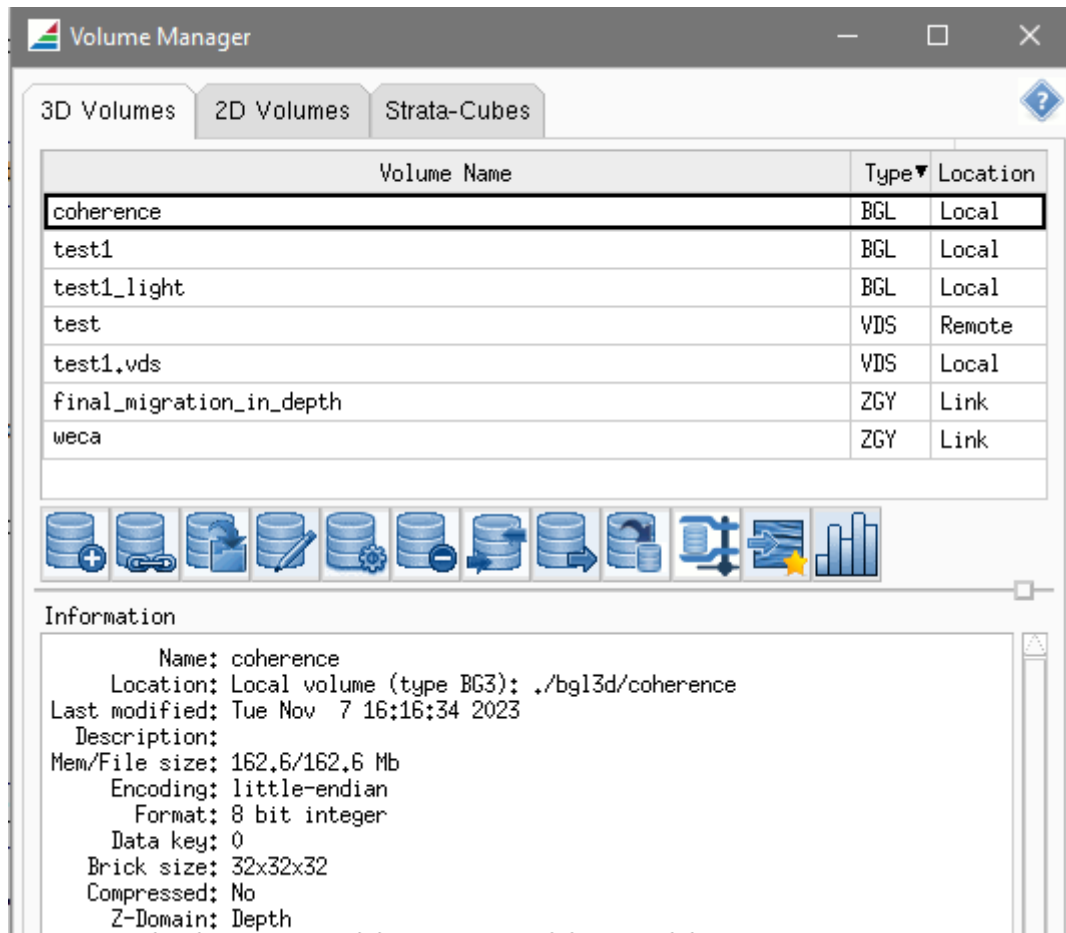
*Max slip tendency field-lines and corresponding surface property*



## Support for VDS 3D Seismic Volumes

T7 7.3 now supports the use and creation of Bluware Inc. VDS 3D seismic volumes, including volumes hosted on remote datastores, such as Amazon S3.

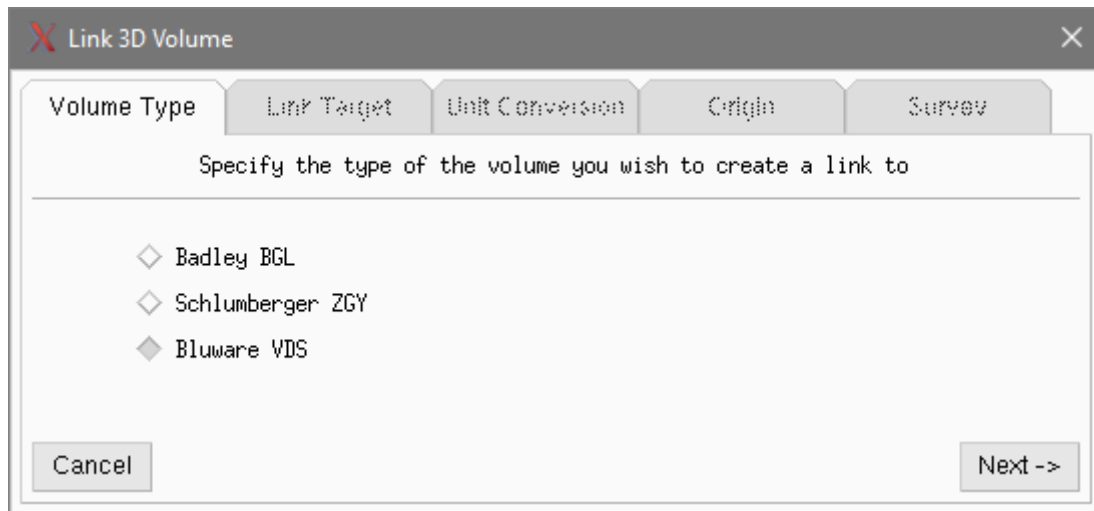
The Volume Manager utility now supports three 3D volume types: BGL, ZGY and now VDS. To simplify management, all 3D volumes are now housed under a single “3D Volumes” tab with a table replacing the previous volume list:



The “Type” column shows the volume type: BGL, ZGY or VDS. The “Location” column indicates if the volume is a “Local” file, “Link” to a local file, or link to a “Remote” volume.

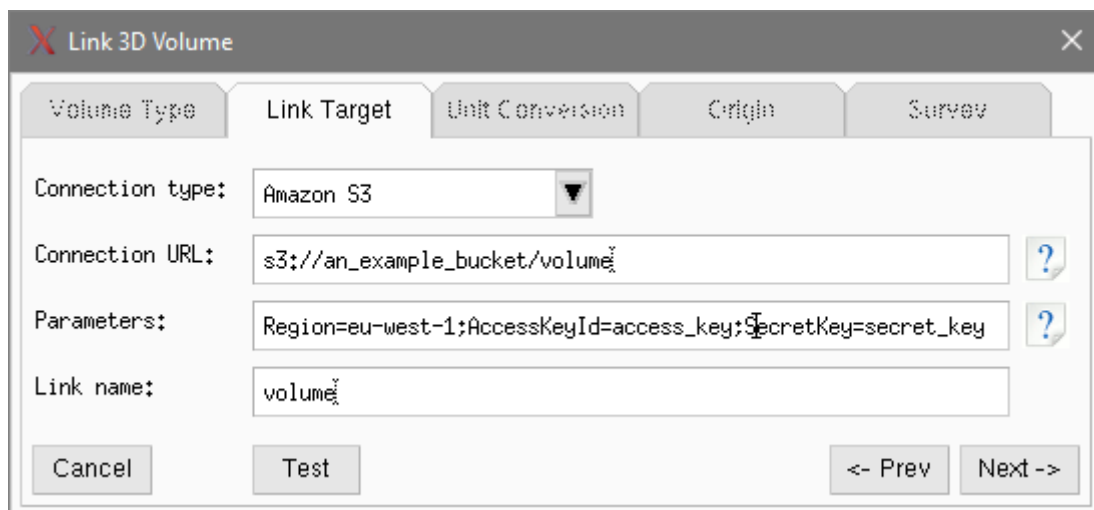
## Creating links to VDS volumes

The “Create Link” wizard has been extended to add support for VDS volumes and to (optionally) create a 3D survey based upon the volume geometry:



The screenshot shows the 'Link 3D Volume' wizard with the 'Volume Type' tab selected. The wizard has five tabs: 'Volume Type', 'Link Target', 'Unit Conversion', 'Origin', and 'Survey'. The 'Volume Type' tab contains the instruction 'Specify the type of the volume you wish to create a link to' and a list of three options: 'Badley BGL', 'Schlumberger ZGY', and 'Bluware VDS'. The 'Bluware VDS' option is selected. At the bottom, there are 'Cancel' and 'Next ->' buttons.

T7 supports linking to VDS volumes stored on remote datastores, such as Amazon S3 or OSDU Seismic Store. The “Create Link” wizard allows these parameters to be specified and tested:



The screenshot shows the 'Link 3D Volume' wizard with the 'Link Target' tab selected. The wizard has five tabs: 'Volume Type', 'Link Target', 'Unit Conversion', 'Origin', and 'Survey'. The 'Link Target' tab contains the following fields: 'Connection type:' with a dropdown menu set to 'Amazon S3'; 'Connection URL:' with a text box containing 's3://an\_example\_bucket/volume'; 'Parameters:' with a text box containing 'Region=eu-west-1;AccessKeyId=access\_key;SecretKey=secret\_key'; and 'Link name:' with a text box containing 'volume'. There are help icons (?) next to the 'Connection URL' and 'Parameters' fields. At the bottom, there are 'Cancel', 'Test', '<- Prev', and 'Next ->' buttons.

Parameters may contain sensitive information such as user credentials and are therefore stored encrypted on disk.

## Exporting volumes as new VDS volumes

The “Export Volume” dialog has been replaced with a wizard that allows any volume to be exported as a new BGL, SEGY or VDS volume:

The screenshot shows a dialog box titled "Export BGL Volume: coherence". It has two tabs: "Input" and "Output", with "Output" currently selected. The "Output" tab contains the following fields and controls:

- Save as type:** A dropdown menu set to "VDS".
- URL:** A text input field containing "s3://an\_example\_bucket/volume".
- Parameters:** A text input field containing "Region=eu-west-1;AccessKeyId=access\_key;SecretKey=secr".
- Compression:** A dropdown menu set to "Wavelet".
- Tolerance:** A numeric input field set to "1".

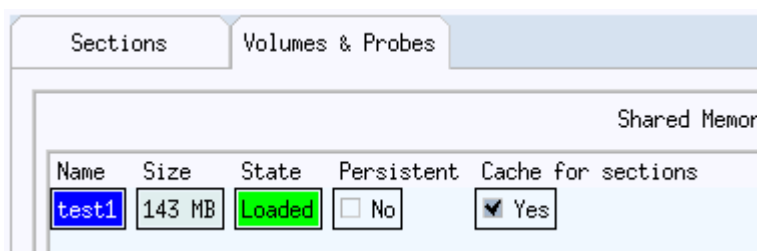
At the bottom of the dialog, there are three buttons: "Cancel", "<- Prev", and "Export".

When exporting to a VDS volume, options are provided to allow exporting to a remote datastore and to specify the type and level of compression desired.

## FUNCTIONAL ENHANCEMENTS

### *Shared memory volume cache for Sections*

A new **Cache for sections** option is available after loading a shared memory volume in the Interpret module:



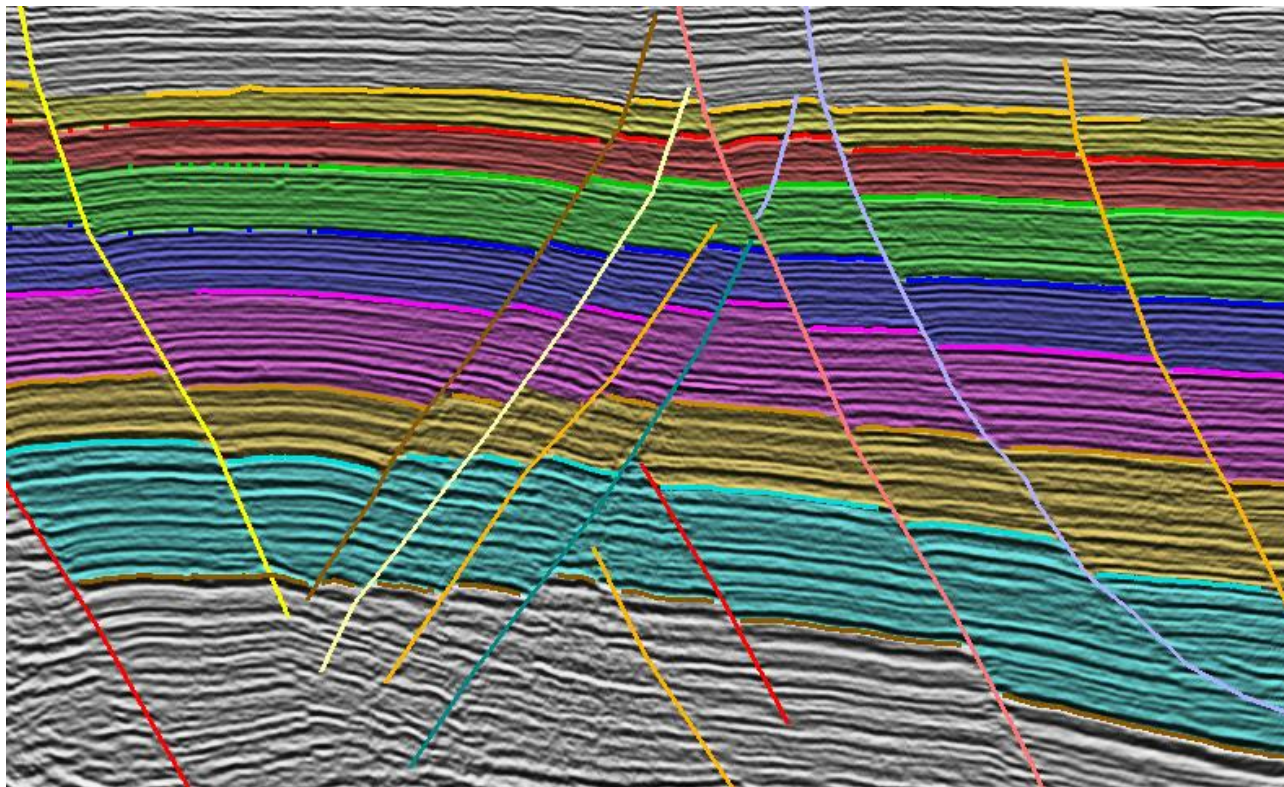
When enabled, this will allow any 3D sections subsequently loaded (lines or timeslice), that are associated with the same Seismic Access Definition, to read volume data directly from the shared memory volume.

This can be significantly faster than loading data directly from the underlying on-disk volume, especially for volumes that are stored on remote datastores.

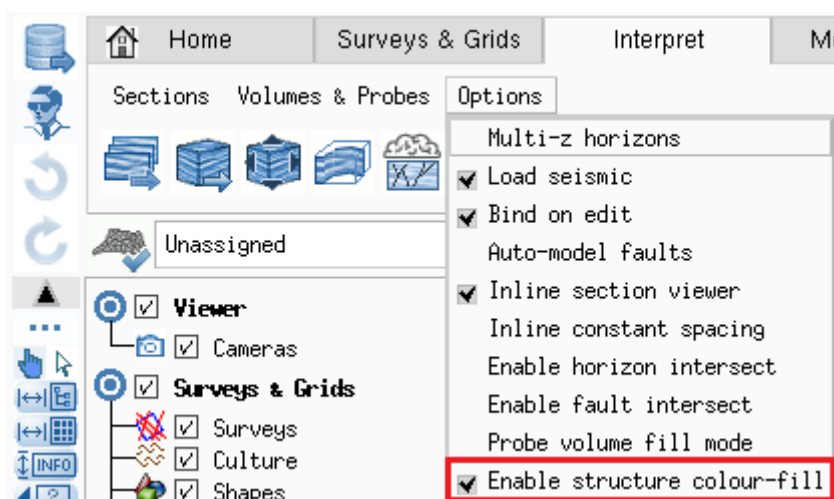
The option is enabled by default when loading a shared memory volume that encompasses the entire on-disk volume, or when loading VDS volumes stored on a remote datastore (eg. Amazon S3)

## Structure Colour Fill Extended to Box-Probes

The Structure Colour Fill, introduced in 7.210 for 2D and 3D vertical sections, has now been extended to box probes:

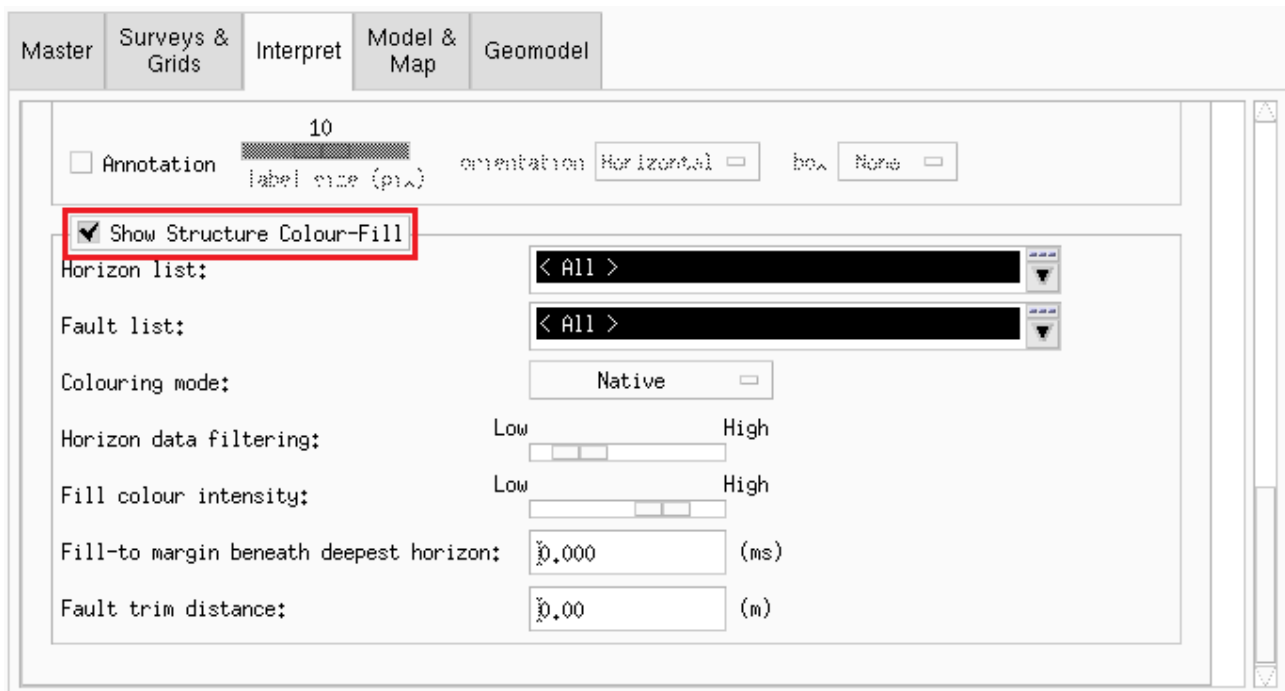


To display the Structure Fill on box probes, first ensure the relevant option is enabled in the Interpret menu:

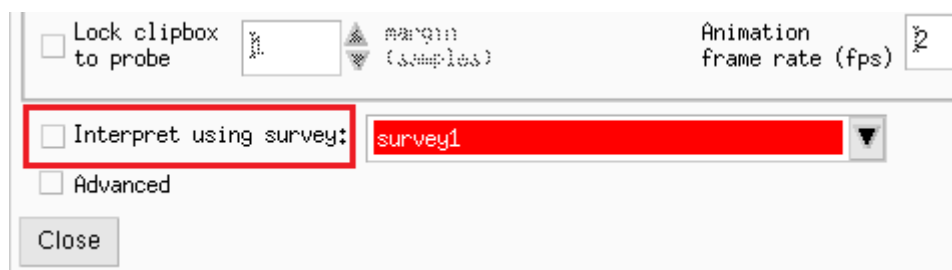




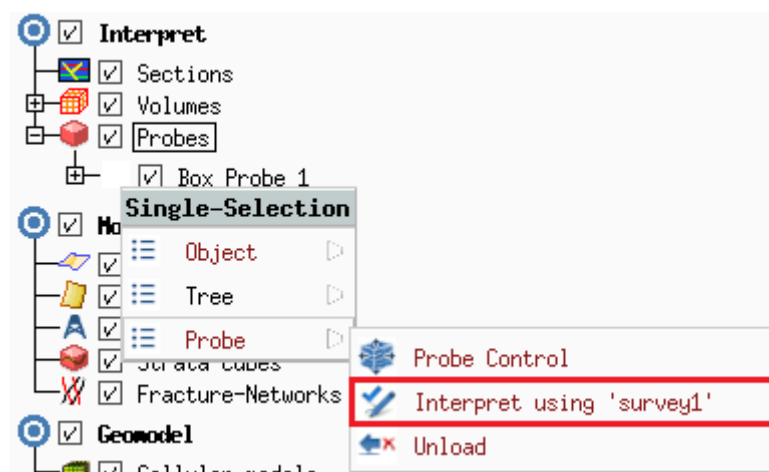
In the Style Editor, ensure the “Show Structure Colour-fill” option is checked and expanded:



Finally, the box probe must be in Interpret Mode for the Structure Colour-fill option to function. Enable using the option in the bottom left of the Probe Controller dialog:



Or alternatively, using the Probe right-button context menu in the viewer or tree:



## ***Principal Stress Attributes for Horizons, Faults, Fracture Networks***

With an active Stress Scenario defined the following present-day stress attributes can now be selected in the Project Parameters for computation in the Volume Editor on Horizon, Fault and Fracture Network surfaces:

- Sv (Vertical Stress)
- Sh-min (Min. Horizontal Stress)
- Sh-max (Max. Horizontal Stress)
- Sh-azi (Azimuth of Max. Horizontal Stress)
- Pf (Pore Fluid Pressure)

Once computed these can be:

- Displayed as surface attributes in the Volume Editor.
- Used in the Attribute Calculator as a basis for computing user-defined attributes.
- Plotted against other attributes using the Plot-Viewer utility
- Exported as ASCII data
- Exported to Petrel (using the direct link)

## Improved Culture Image Load & Positional Editing

The **Surveys and Grids** module in Volume Editor has always supported loading images as culture, but required an associated “world” file to provide size and position.

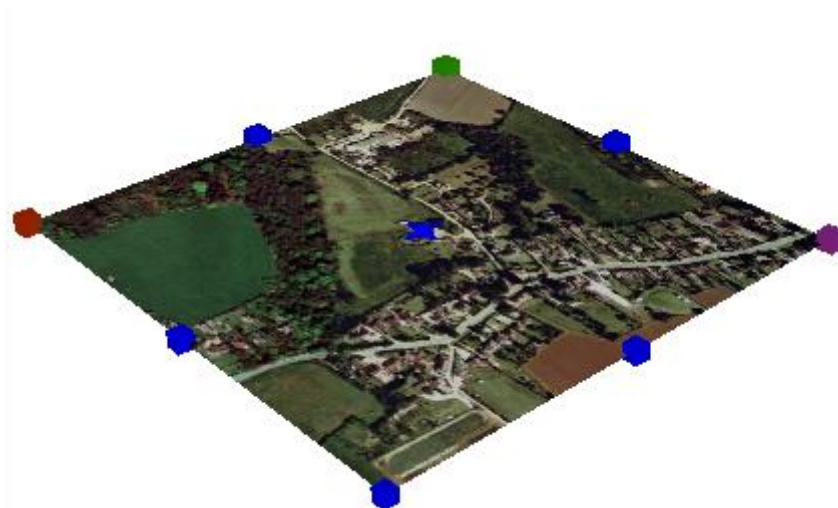
In T7 7.3 it is now possible to load images directly without a world file. Images will be created at a default size and position based upon the Volume Editor XYZ extents.

Once loaded, images may then be sized and positioned by selecting the image in the viewer and choosing **Culture->Edit** from the context menu, or by double clicking the image. The following dialog is displayed to allow resizing and repositioning of the image:

	X	Y	Z
Upper Left:	410943.23 (m)	4989802.85 (m)	-2643.173 (m)
Upper Right:	448746.65 (m)	4988780.44 (m)	-1925.048 (m)
Lower Right:	447733.92 (m)	4951321.72 (m)	-1944.267 (m)

OK Cancel ☐ Use transparency Reset

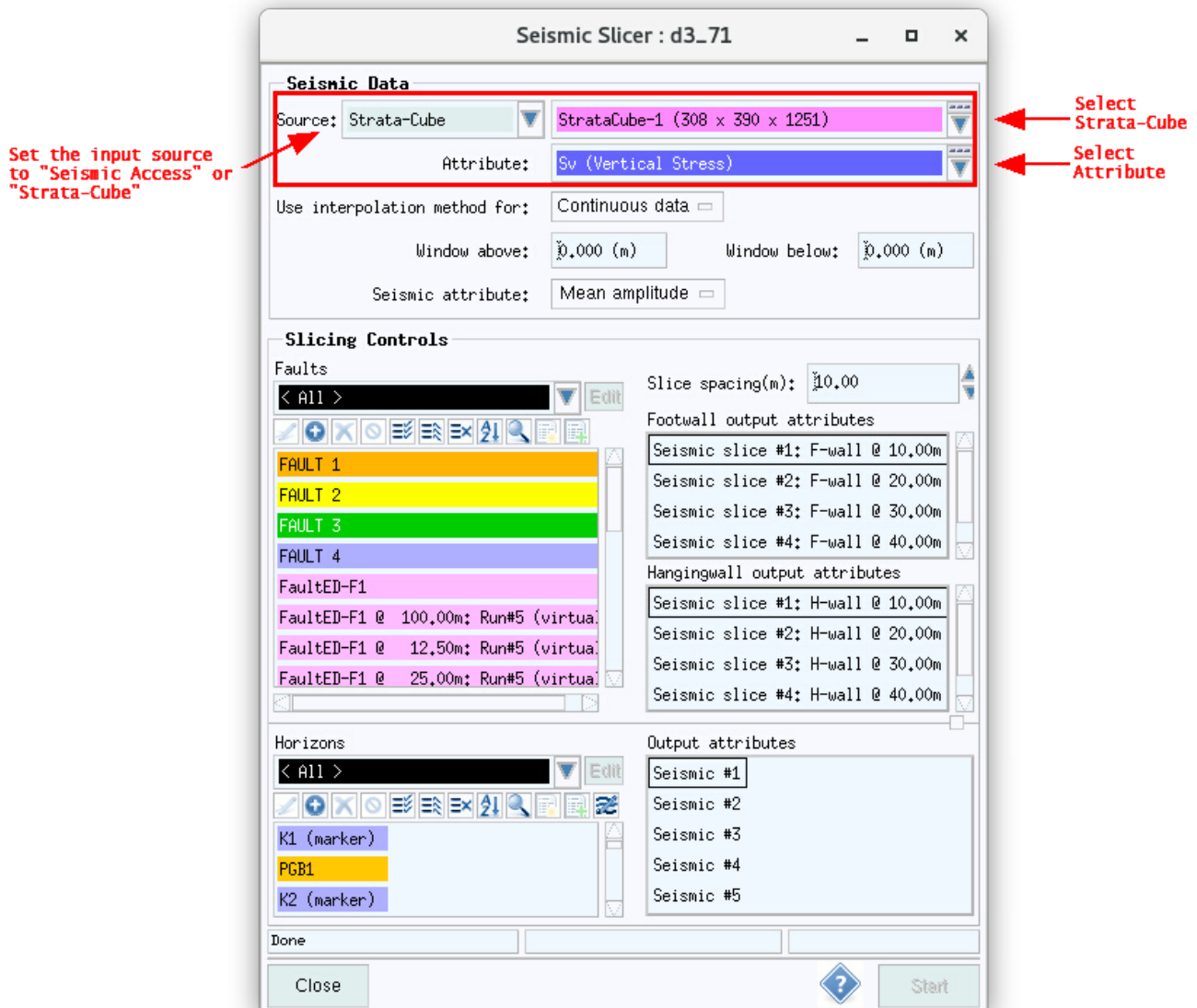
The text fields may be used to size and position the image by specifying the corner point XYZ values. In addition, once an image is being edited, it will display handles that allow it to be moved and sized interactively:



The new size and position are stored within the Volume Editor session upon save.

## Seismic Slicer Extended for Strata-Cube Attribute Volumes

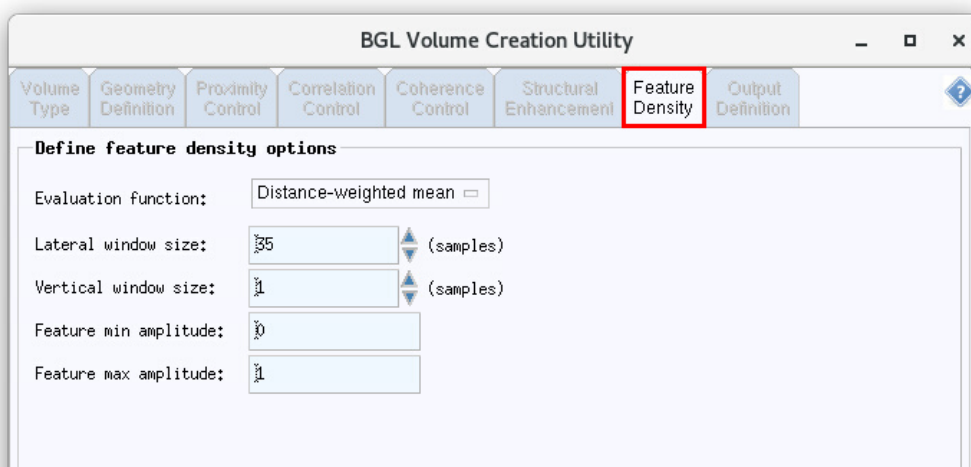
The Seismic Slicer Tool is used to extract seismic data on fault and horizon surfaces as attributes that can be displayed upon them using Display Methods. The Seismic input is supplied in the form a Seismic Access Definition. With the introduction of Strata-Cubes the Seismic Slicer has been extended so that the input can be optionally sourced from a Strata-Cube attribute. In this way, it is now possible to display Strata-Cube attributes upon fault and horizon surfaces.



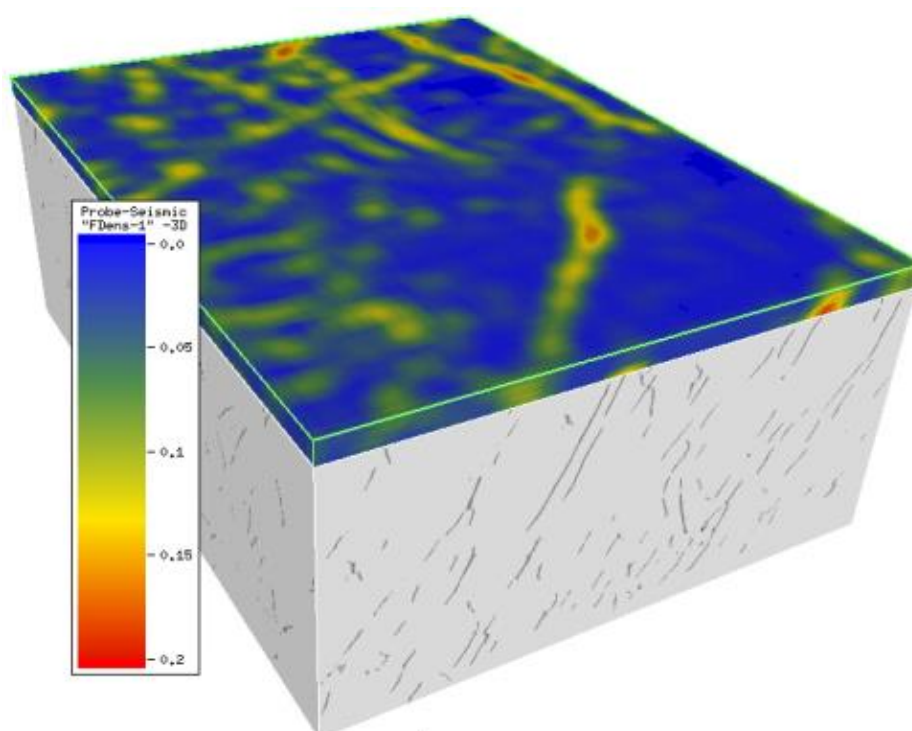
## Feature Density Volume Creation

The Volume Creation tool (accessed from the T7 Main Menu) has been provided with a new process to permit the creation of “Feature Density” volumes.

The process simply looks for input volume amplitudes, over a defined window, that fall within a specific range (features), and generates a value at each sample location which is the ratio of the number of feature-points to the overall window size. The output volume will contain density values in the range 0 to 1. For any given location a value of 0 represents no features identified in the window while a value of 1 would indicate that all points in the window around that location were identified as features.



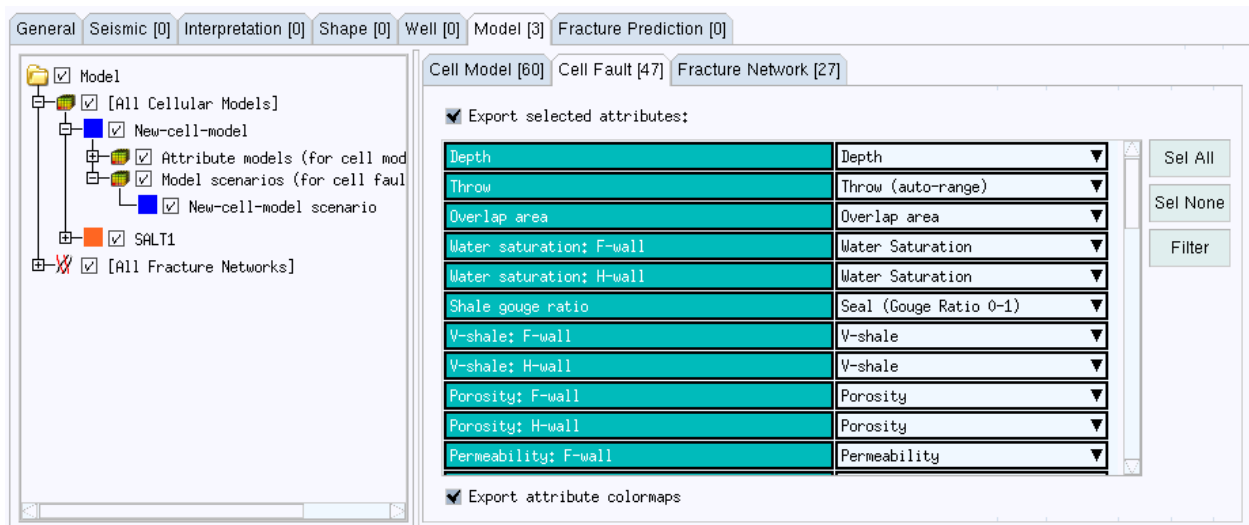
The example below shows part of a Feature Density volume created from a fault indicator volume (shown beneath). The blue areas show low feature density while the red shows high density.





## Petrel/T7 Export Support for Cellular Fault Attribute Transfer

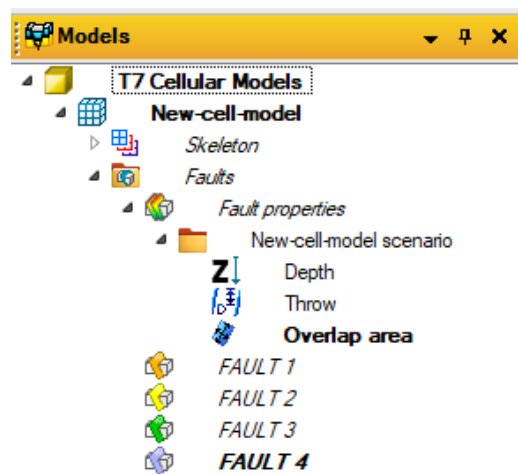
It is now possible to export T7 cellular fault attributes to Petrel and other T7 projects:



The **Cell Fault** tab on the right of the interface allows the attribute names to be chosen. The combo box to the right of each attribute name allows the attribute colormap to be specified.

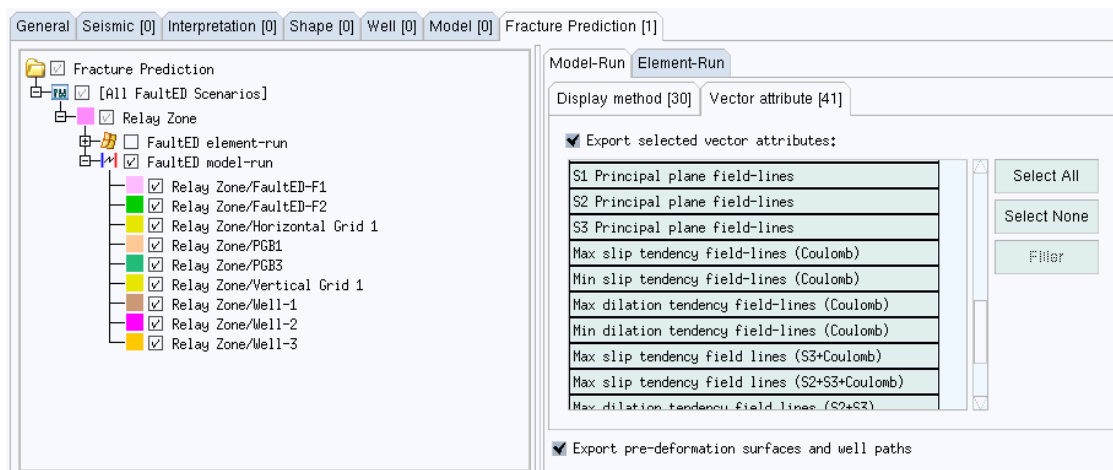
The attributes exported are based upon the attribute names chosen and the cellular model scenarios checked in the tree.

When importing into Petrel, each T7 cellular model scenario will be represented as a Petrel fault property folder. T7 cellular fault attributes will appear as Petrel properties within the property folder:

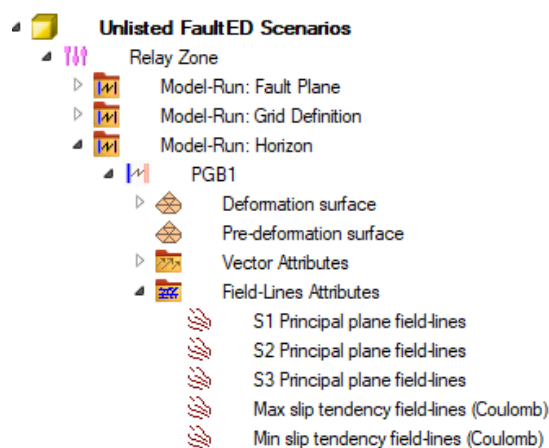


## Petrel/T7 Export Support for FaultED Field-Lines

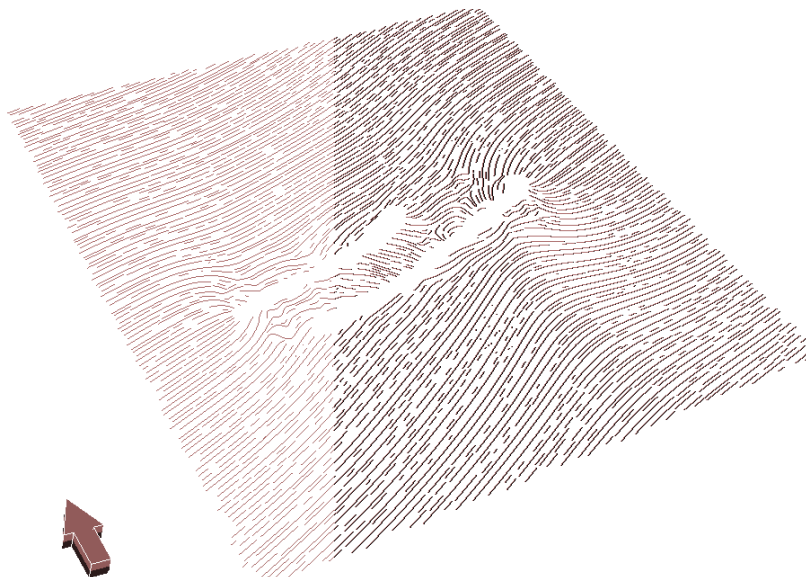
Export of FaultED vector attributes to Petrel and T7 has been extended to support the new field-lines vector attributes:



After importing into Petrel, field-line vector attributes will be present in the Petrel Models tree:



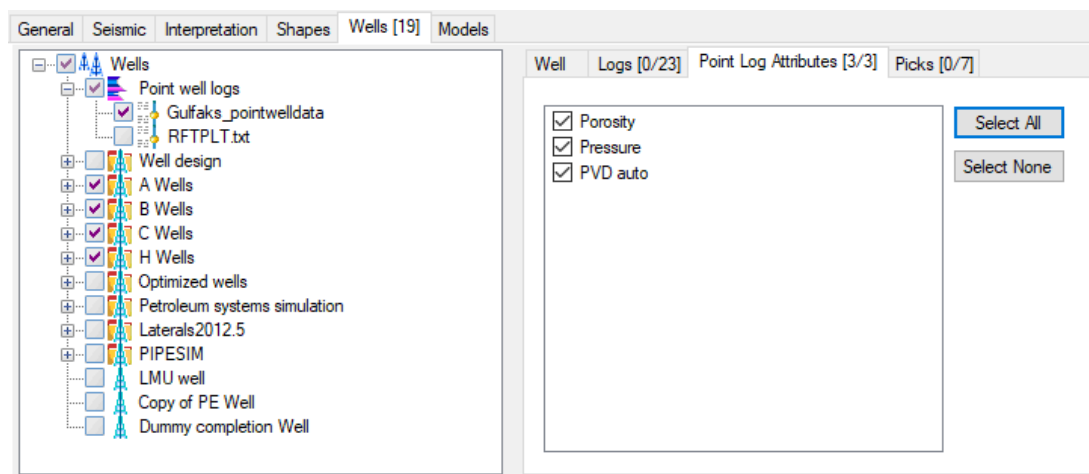
Checking the field line attributes nodes in the Petrel tree will render them in the active viewer:



## Support for import and visualisation of Petrel Well Point logs

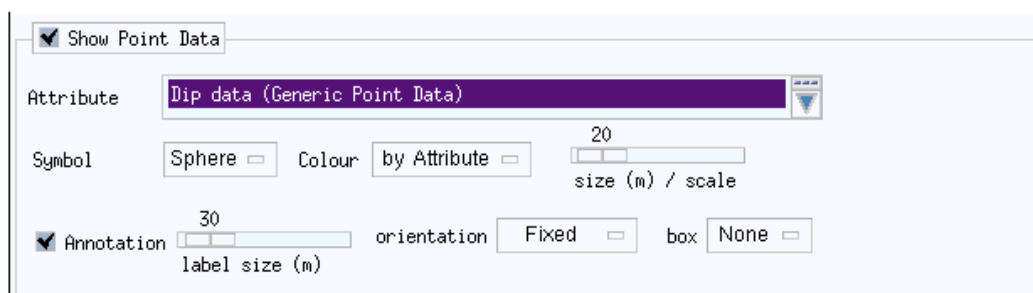
It is now possible to import and visualise Petrel well point log attributes in T7.

The Petrel plugin **Wells** tab now shows **Point Well logs** in the tree and provides an additional **Point Log Attributes** setting tab to select the attributes:

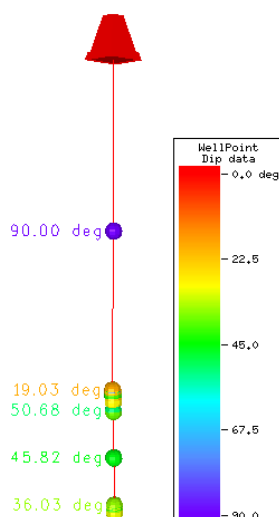


Upon import, T7 **well point-sets** will be created for each attribute chosen. If both dip and azimuth attributes exist for a Point Well Log and are checked in the plugin interface, a T7 **well vector-set** will also be created.

In Volume Editor, it is now possible to visualise well point data. The Style Editor contains a new section under Model & Maps->Wells to configure well point data:

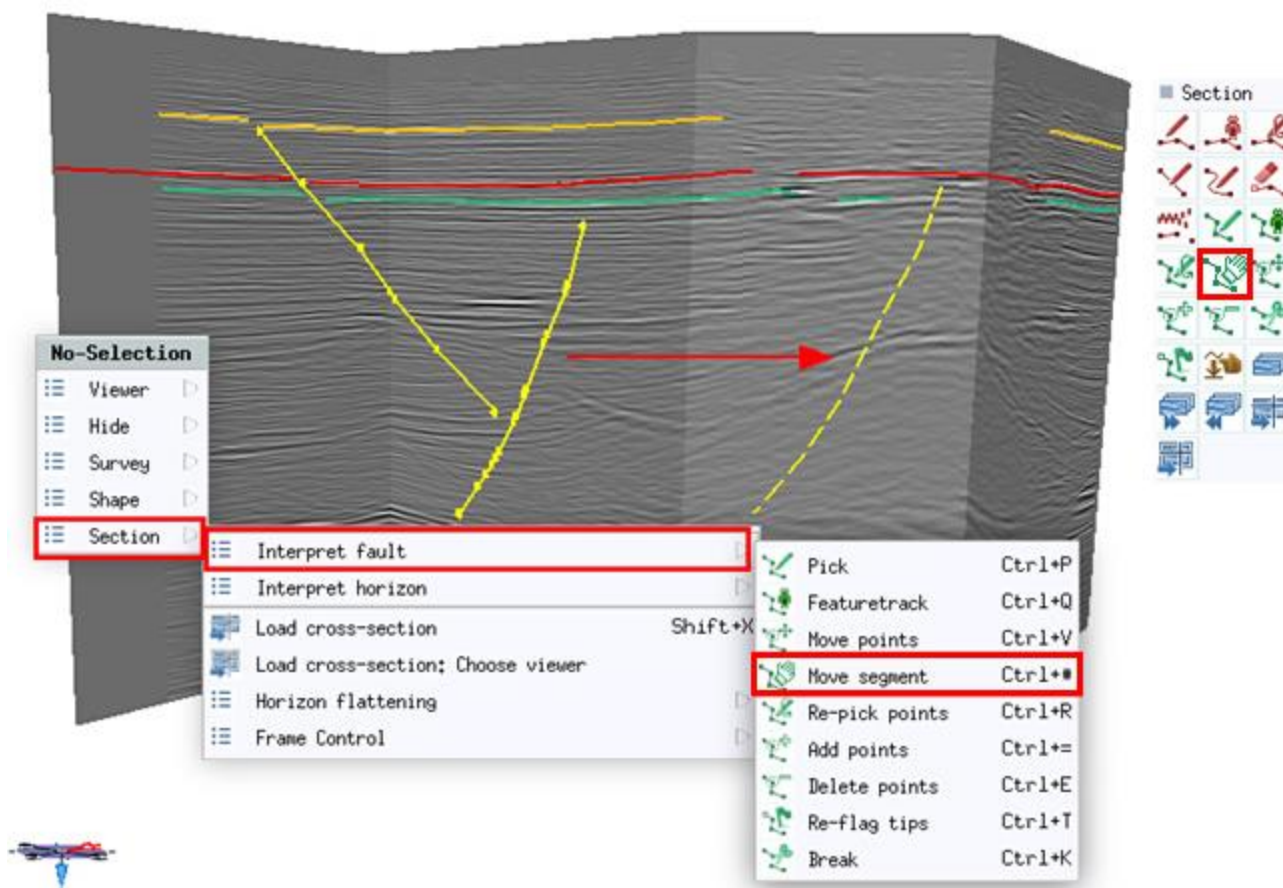


Once the point data style is enabled and configured, the points will be shown on the well trajectory in the viewer:



## Function to Move Whole Fault Segments on Sections

A new function has been added to the fault interpretation toolkit to enable an entire fault segment to be moved to a different location on a section. This function is supported on all section types, 3D rows, columns, z-slices, arbitrary lines and 2D lines and is accessed through the <MB3> Popup Menu and context toolbar.

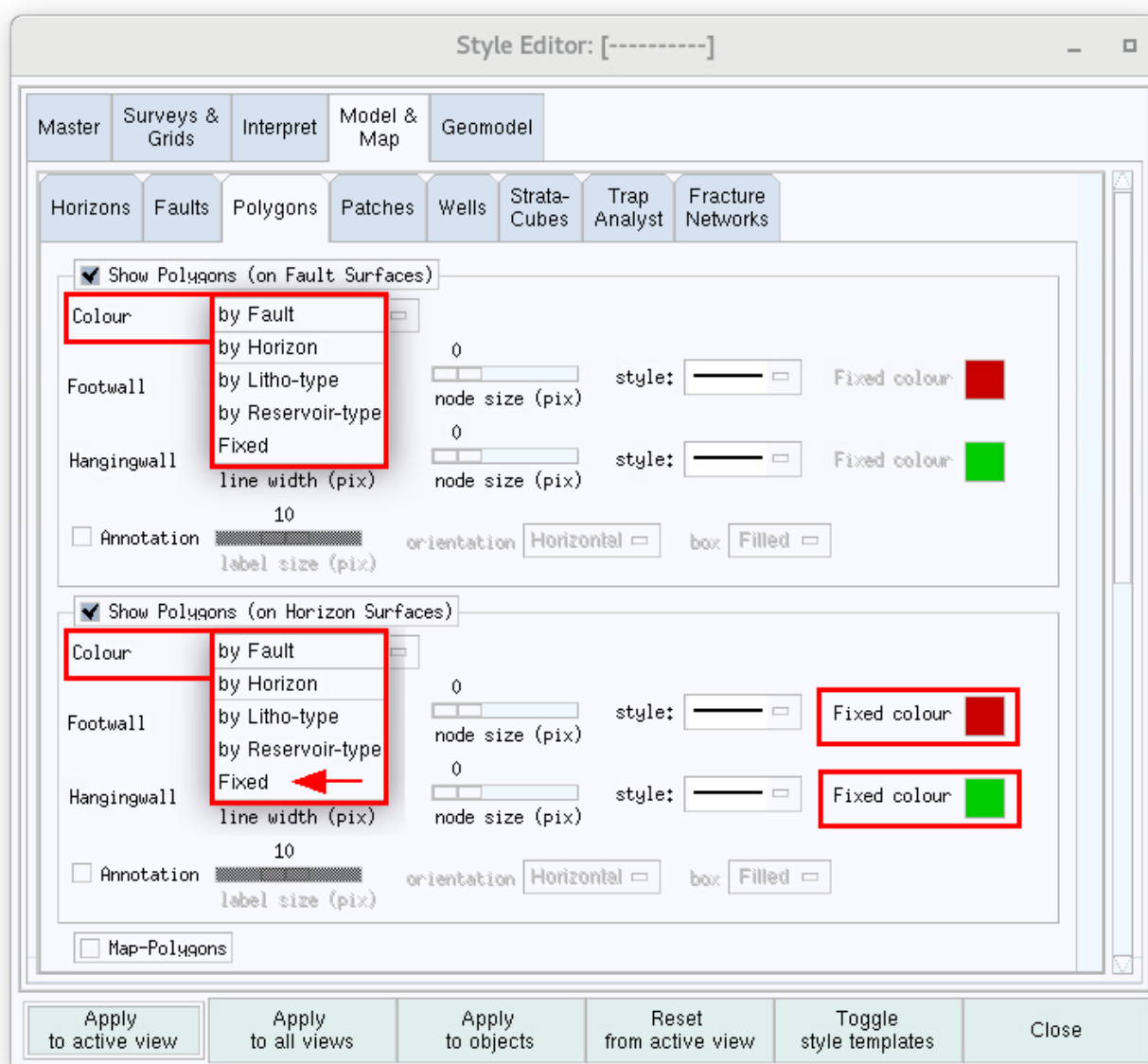


Like other Fault and Horizon interpretation tools, once the “Move segment” mode is enabled, any segment visible on any section in the viewer can be moved. Use <MB3> or the <Esc> key to exit the mode.

## Colour Options for Framework Polygons

Traditionally in T7, framework polygons (lines of intersection between fault and horizon surfaces) have been drawn in the native horizon colour when displayed on fault surfaces and conversely in the native fault colour when displayed on horizon surfaces. The style controls for the display of polygons have now been extended to provide the following colouring options for both modes of display:

- **Colour by fault** – use the native fault colour
- **Colour by horizon** – use the native horizon colour
- **Colour by lithology-type** – use the assigned horizon litho-type colour
- **Colour by reservoir-type** – use the assigned horizon reservoir type colour
- **Use a fixed colour** – use a colours for footwall & hanging wall defined in the style.

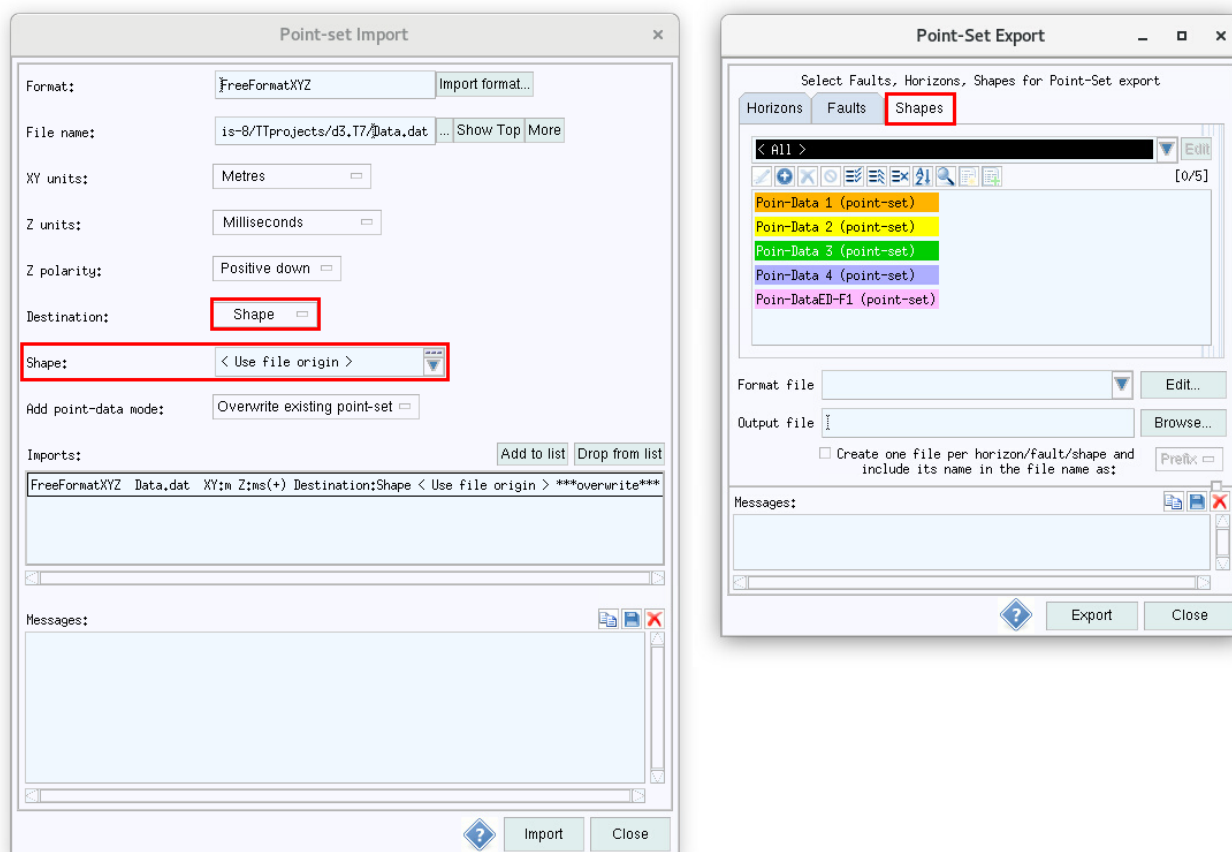


Style Editor showing new colouring options for Polygons



## Support for SHAPE Point-Set ASCII Import/Export

Shapes in T7 can take a number of forms: Tri-meshes, Polygons, Poly-Lines and Point-Sets. The point-set form is now supported through ASCII import and export of point-set data.



*ASCII Point-Set Import& Export for Shapes*

The ASCII Point-Set export can also be used to export point-set, polygon and poly-line Shapes.

## ***Project Extents Option to Include/Exclude Deactivated Data***

Within the **Project Extents** editor in Database Explorer, a new option is provided to include deactivated items when calculating extents:

Project extents: Project extents Object UID: 0, Index: -1

<input checked="" type="checkbox"/> X (m):	min	<input type="text" value="332644.35"/>	max	<input type="text" value="562120.59"/>
<input checked="" type="checkbox"/> Y (m):	min	<input type="text" value="69822.00"/>	max	<input type="text" value="6789452.50"/>
<input checked="" type="checkbox"/> Z (m):	min	<input type="text" value="2000.000"/>	max	<input type="text" value="15012.000"/>
<input checked="" type="checkbox"/> Depth (m):	min	<input type="text" value="37.497"/>	max	<input type="text" value="6592.203"/>

☒ Include deactivated items

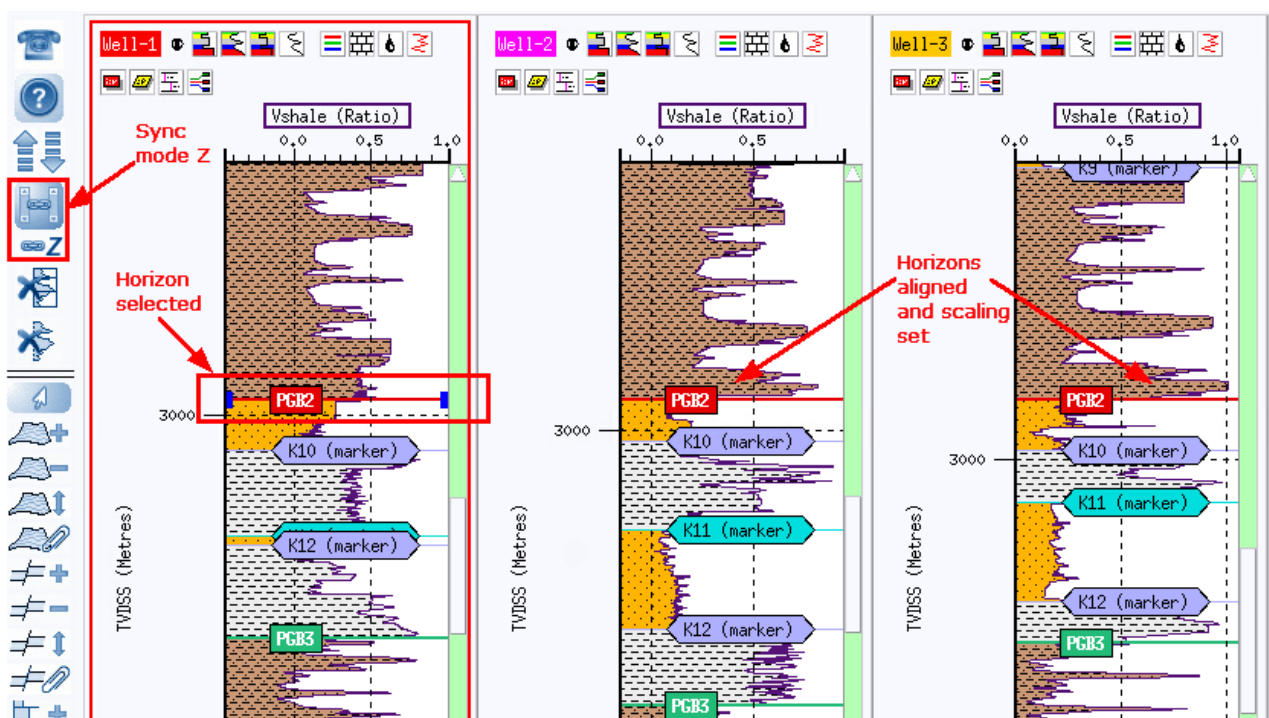
It can be useful to disable this option before recomputing extents in cases where deactivated data control part or all of the current the project extents. The project extents determine the “reset” view function in the Volume Editor and it is generally desirable to have this operate on the extent of the main area of interest (AOI).

## Well Editor – Horizon Pick Alignment

When viewing multiple wells in the Well Editor it is often useful to line up the tracks at the level of a particular horizon pick. This has, of course, been possible in all past versions of the Well Editor, but the mechanism has been to manually adjust the scroll positions of the tracks so that they line up as required.

In T7.3, the Well Editor has been provided with a simple way of achieving horizon pick alignment using the existing scroll synchronization facility together with horizon pick selection.

When the Track Synchronisation is ON (either in "Z" [depth] or "A" [aligned] mode), the selection of an assigned horizon pick in any track will result in the alignment of the same pick where it occurs in any of the other tracks. Note that when using the "A" sync mode, the vertical scale of individual tracks can be different. When using "Z" sync mode, the vertical scales will be set to be the same - this is the required mode when looking at comparative thickness changes. Note that in "Z" sync mode, the horizon alignment will be lost as soon as any of the tracks are scrolled as this will revert the display to conform to the depth alignment. To avoid this, it is possible to scroll the tracks in "Aligned" mode using a <Shift>+MB2 drag operation in the track window (not the scroll-bar).



## USABILITY IMPROVEMENTS

### *Table-Based Managers for Fault Polygons & Fault Segments*

Database Explorer has been extended to add managers for fault polygons and fault segments.

The Polygon manager is available when selecting the Polygon type node in the object tree:

	Fault Plane	Horizon	Model lock
1	Backspace - Copy	PGB1	<input type="checkbox"/> No
2	FAULT 1	PGB1	<input type="checkbox"/> No
3	FAULT 2	PGB1	<input type="checkbox"/> No
4	FAULT 3	PGB1	<input type="checkbox"/> No
5	FAULT 4	PGB1	<input type="checkbox"/> No
6	FaultED-F1	PGB1	<input type="checkbox"/> No
7	FaultED-F2	PGB1	<input type="checkbox"/> No
8	Prospect 1	PGB1	<input type="checkbox"/> No

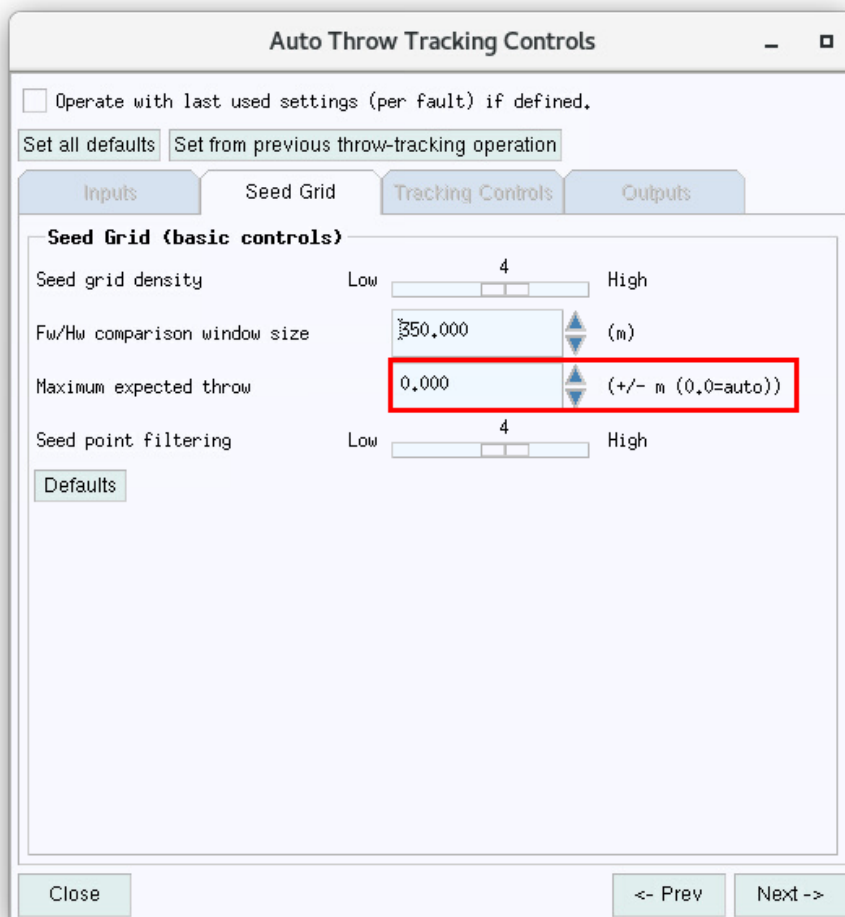
The Fault Segment manager is available when selecting the Line, Timeslice, Fault, Horizon or Abstract fault segment type node in the tree:

	Survey	Origin ID	Plane ID	Fault se	Bound	Type	Num	Displacement control
1	salt3d #1	Col 230	Prospect 1	S.859	<input type="checkbox"/>	Interpreted	5	DispControl,0
2	salt3d #1	Col 235	Prospect 1	S.860	<input type="checkbox"/>	Interpreted	9	<None>
3	salt3d #1	Col 240	Prospect 1	S.861	<input type="checkbox"/>	Interpreted	5	<None>
4	salt3d #1	Col 245	Prospect 1	S.862	<input type="checkbox"/>	Interpreted	6	<None>
5	salt3d #1	Col 250	Prospect 1	S.863	<input type="checkbox"/>	Interpreted	7	<None>
6	salt3d #1	Col 255	Prospect 1	S.864	<input type="checkbox"/>	Interpreted	7	<None>
7	salt3d #1	Col 260	Prospect 1	S.865	<input type="checkbox"/>	Interpreted	8	<None>
8	salt3d #1	Col 265	Prospect 1	S.866	<input type="checkbox"/>	Interpreted	7	<None>

The Displacement Control combo may set for one or more selected segments in the table.

## ***Throw Auto-tracker Auto-Mode for Maximum Displacement***

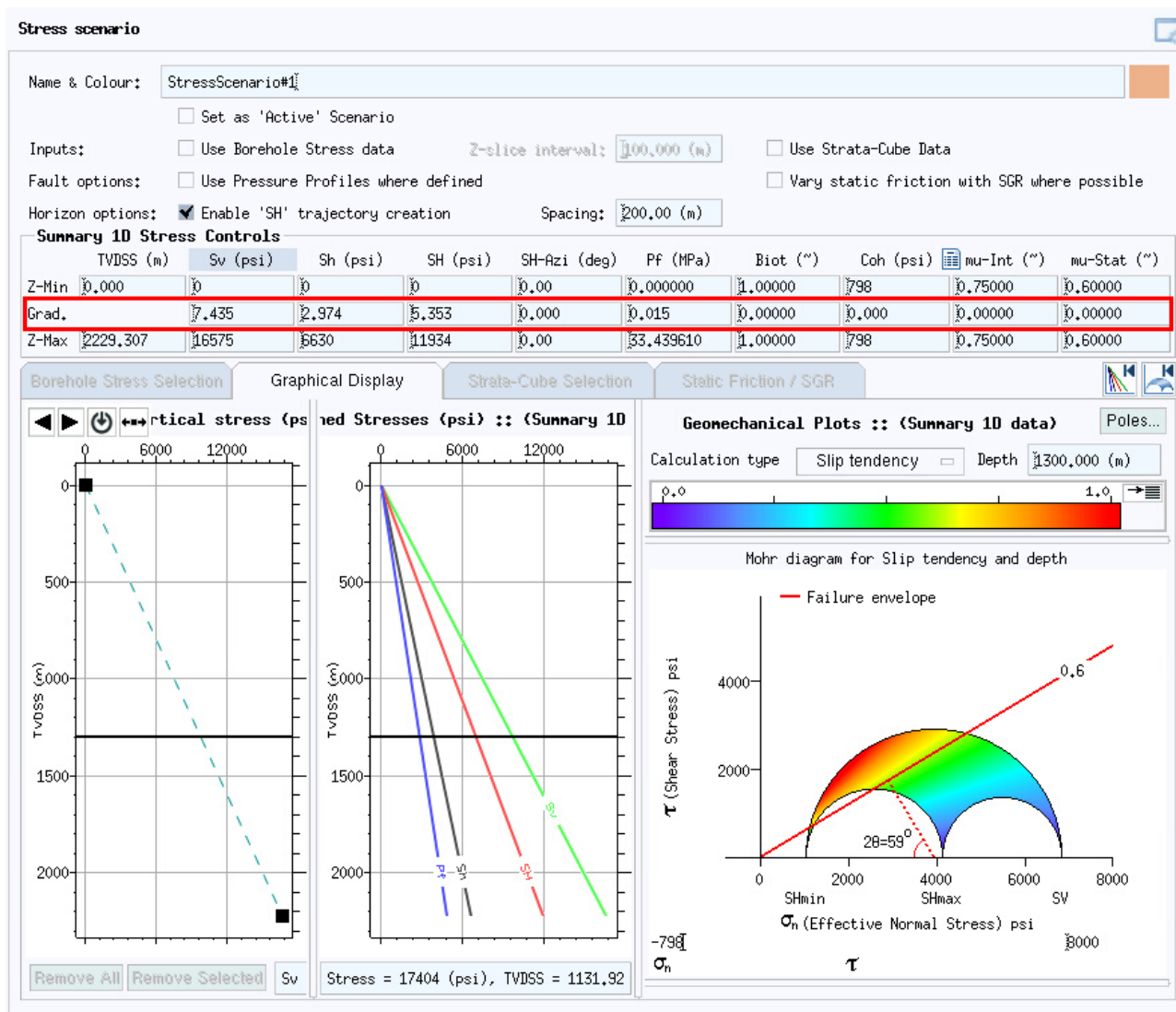
The Throw Auto-tracker tool can now be set to operate in a mode that automatically determines a maximum displacement on a per-fault basis. This means that multiple faults of varying sizes can be more effectively processed in one operation rather than having to rely on multiple runs - each with different user-defined parameters.



Simply, set the "Maximum expected throw" to 0.0 to enable the "Auto" mode.

## Stress Scenario Gradient Inputs

The summary 1D stress-field component inputs in the Stress Scenario editor can now be controlled with the input of gradient values.

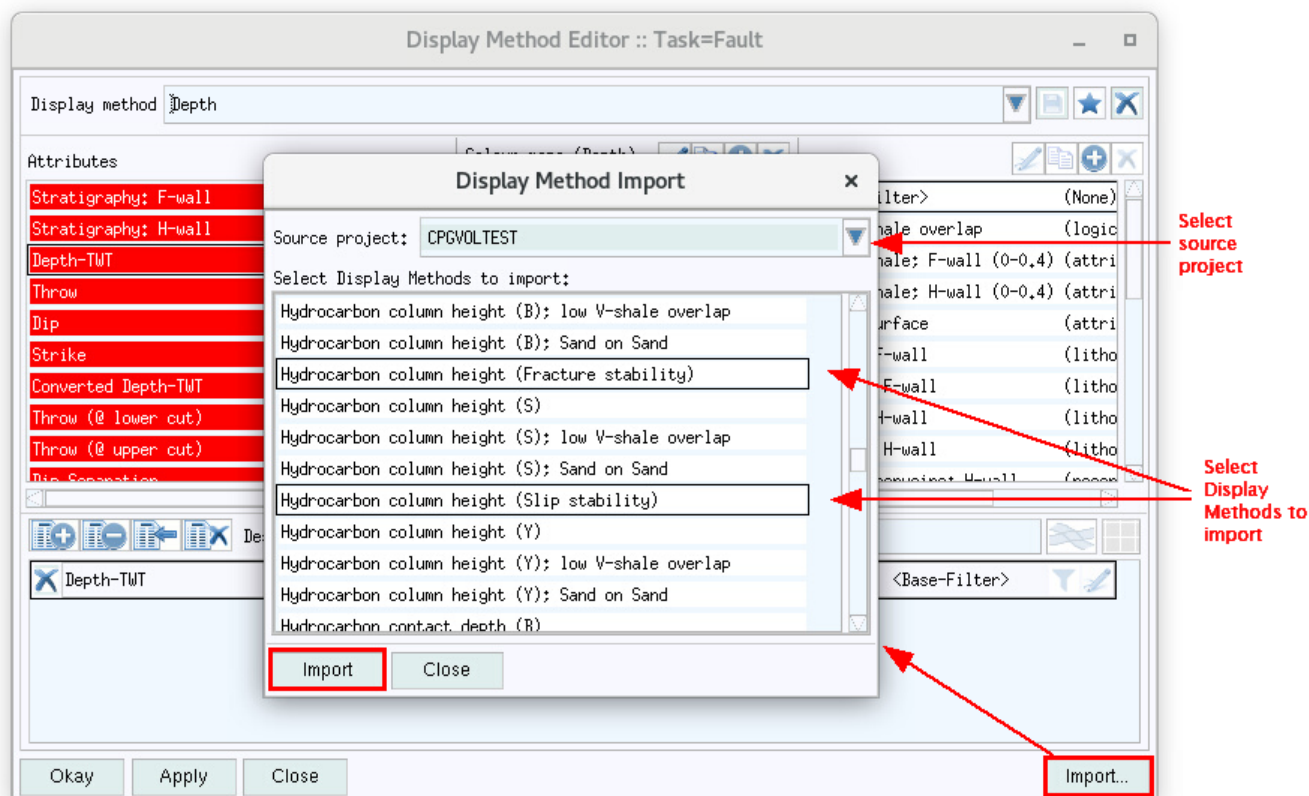


These new inputs make it simpler for the user to enter representative values when gradients for any of the component data (Sv, Sh-min, Sh-max etc) are known. When a gradient value is entered, the base value (at Z-Max) will be computed using the value at Z-Min and the given gradient. If a value at Z-Max is entered the gradient will be re-computed accordingly. If a value at Z-Min is entered, it will be used with the gradient to recompute the value at Z-Max. The gradient values are displayed using the depth display units combined with those for the particular component data. In the above example, the gradient for Sv is 7.435 psi/m and for Pf it is 0.015 Mpa/m



## Display Method Import Tool

A new function has been added to the Display Method Editor so that Display Methods and their colormaps and filters can be imported from a different T7 project. This is very useful when non-standard Display Methods have been set up in other T7 projects and it is required to replicate them in the current project.



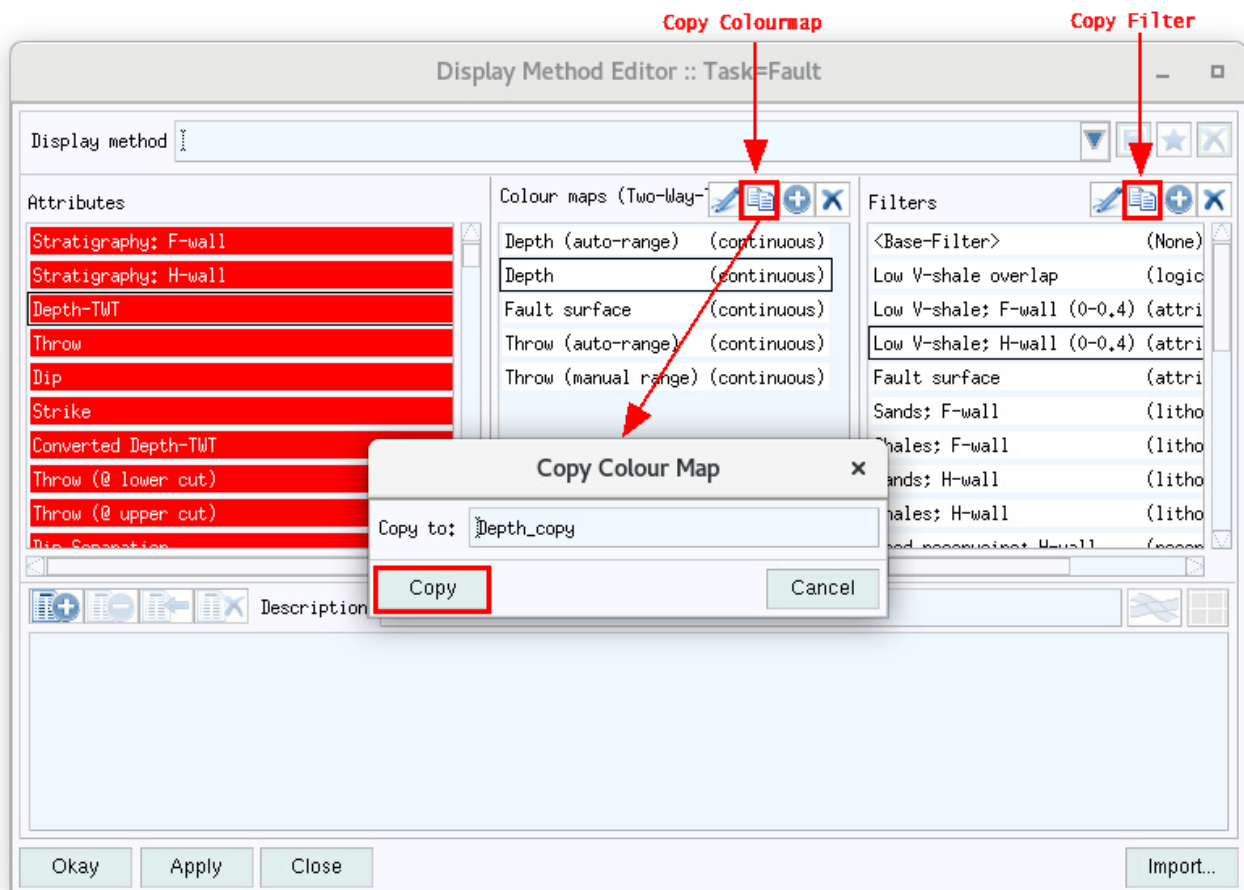
When importing one or more Display Methods, checks are performed to warn the user if the import will overwrite existing resources in the current project. An option to replace or skip-over existing content is provided as below.



Once the import is complete, the new Display Methods, Colourmaps and Filters will be available for use in the current project.

## Display Method Colourmap & Filter Copy Tool

Additional functionality has been added to the Display Method Editor to permit the simple copying of filters and colour maps so that they can be used as the basis for modification based on an existing item.

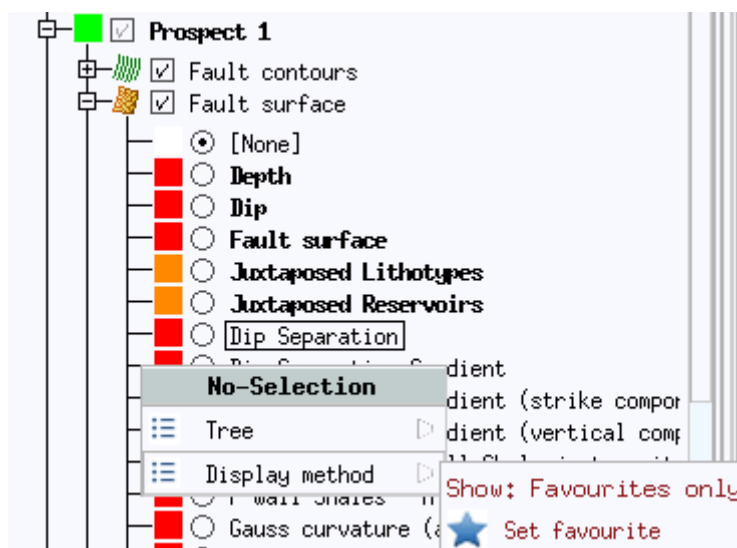


The new options are provided via buttons in the toolbars above the colourmap and filter lists.

## Improvements to the Volume Editor Object Tree

### DISPLAY METHOD FAVOURITES

The Volume Editor object tree now contains support for displaying and managing Display Method favourites:



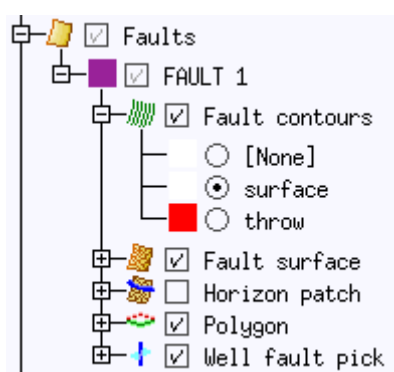
The context menu for display methods in the tree now provides a **Set favourite** option that will add the selected display methods as favourites.

Favourite display methods are shown at the top of the list in bold and can be removed from the favourites list by using the **Unset favourite** context menu option.

Changes to the favourite list made using the Display Method Editor are now reflected immediately in the object tree, therefore the now redundant **Reload Display Methods** menu option has been removed.

### FAULT AND HORIZON CONTOURS

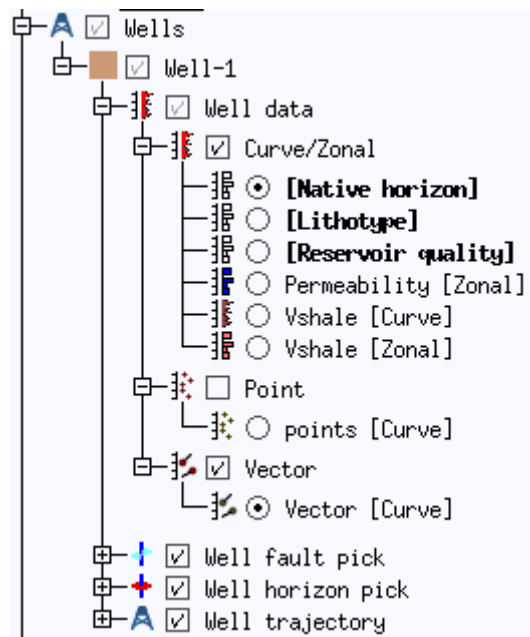
The object tree now provides radio buttons to select the active contour for loaded faults and horizons:



Single clicking a contour radio will set the active contour whilst double-clicking will display the Contour Editor dialog.

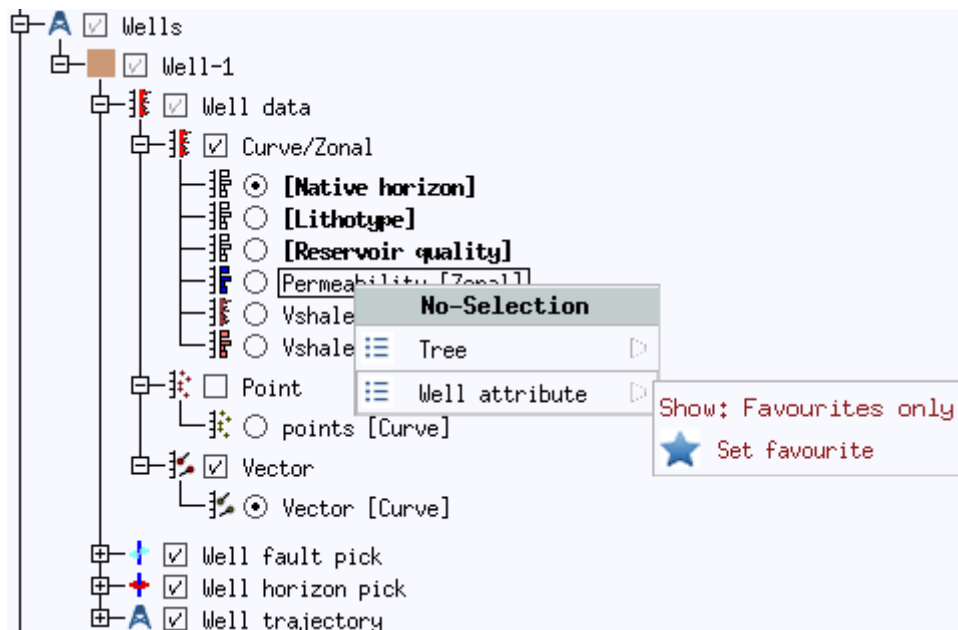
## WELL DATA

The object tree now allows the active well attribute (Curve, Zonal, Point or Vector) for a particular well to be chosen:



Single clicking a well attribute radio will set the active attribute whilst double-clicking will display the Well Attribute Definition editor dialog.

Well attribute radio nodes also provide *favourite* functionality, in a similar manner to display methods:



## Zonal attribute table in Horizon Pick dialog

The well horizon pick editor dialog now displays a list of zonal attribute values associated with the pick:

Modify Well horizon pick 'HrzPick.1'

Parent Well: Well-1

Parent Horizon: PGB1

Name: HrzPick.1

Position: X (m): 412301.24 Y (m): 3166623.38

Measured Depth (m): 1775.248

TWT (ms): 1158.501

TVDSS (m): 1737.751

Marker controls

Scale Mode:

Scale Value (m):

Top Horizon:

Base Horizon:

**Zonal attribute values**

Attribute	Value
Vshale	55.274 %
Permeability	63143.64453 mD

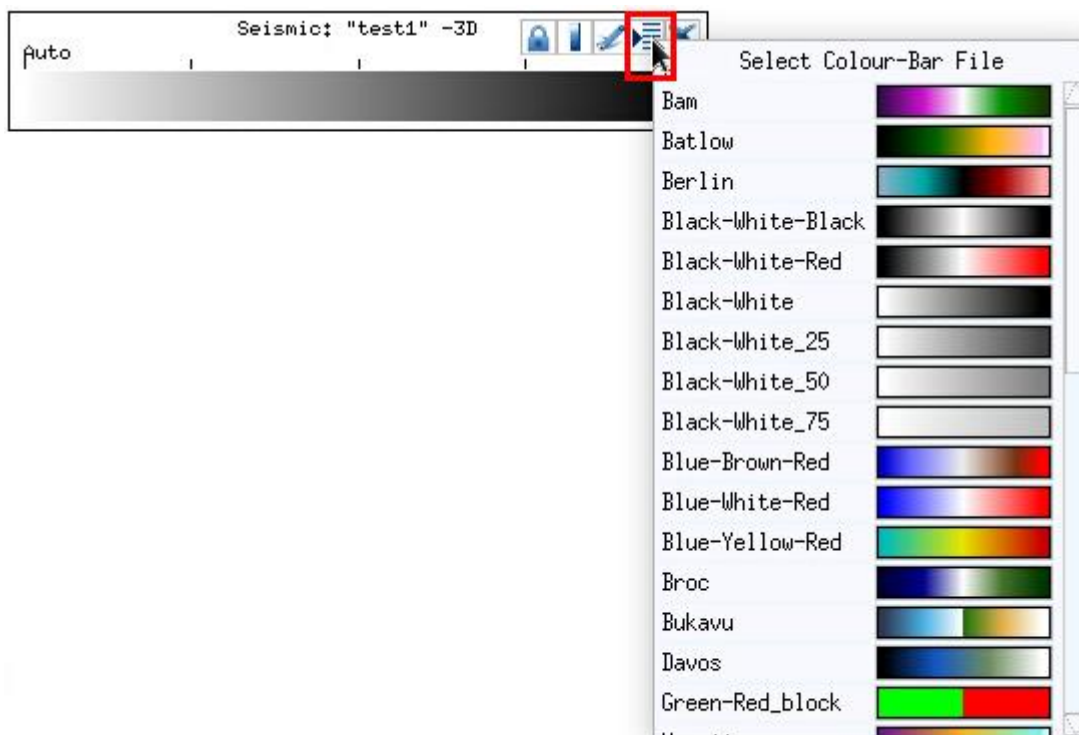
OK Apply Cancel

## Colourmap Preview & Selection Lists

New colourmap previews have been added to colourmap-selection lists where before the list simply showed colourmap names.

### Volume-Editor-Viewer Colour Bars

These have been provided with a tool-bar button to quickly access a new colourmap using the new colourmap preview list.



This provides a quick way to change the colourmap for a particular attribute (in this case, seismic data) without having to open up the more complex colourmap editor (see below).



## Colourmap Editor

The colourmap preview and selection list is also available and can be managed from the T7 Colourmap Editor.

