



Interpolator Tutorial

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Product

Surpac™ 6.6.1

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Introduction

Overview


Interpolator is a module in Surpac that provides advanced geostatistical functionality. For example, multi-element and multi-zone estimation, as well as kriging neighbourhood analysis.

This tutorial is designed to help you to understand the basic concepts of Interpolator, as well as providing you with a procedure to perform an Interpolator run.

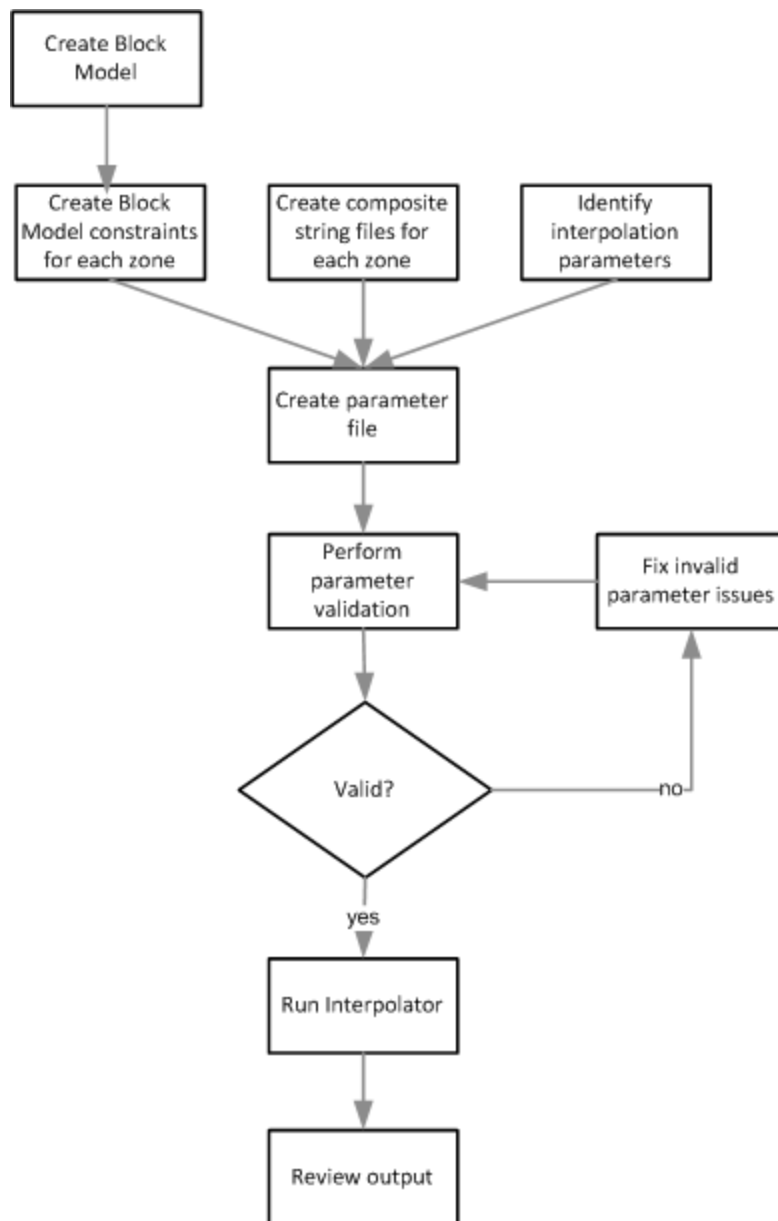
Requirements

Before you begin this tutorial, you must have:

- a good understanding of basic Surpac concepts, Surpac Block Modelling concepts, especially the estimation process for ordinary kriging, and geostatistical concepts
- Surpac installed on your computer
- the data set accompanying this tutorial

 **Note:** If you do not have all of these, you should first complete the examples in the Surpac Introduction, Block Modelling, and Geostatistics tutorials.

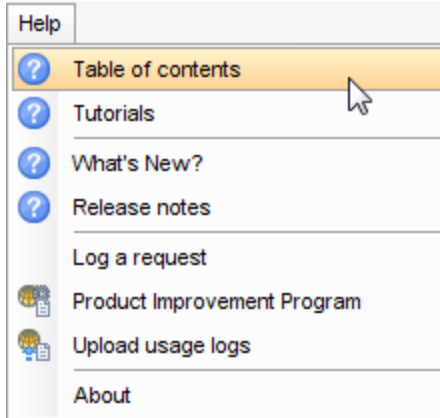
Workflow



Interpolator concepts

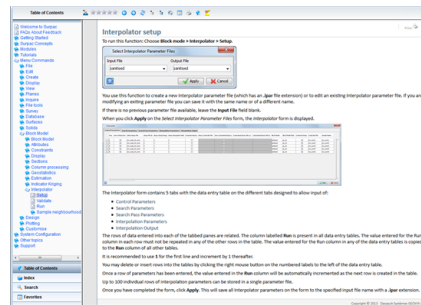
Task: Review information in the Surpac help

1. Start Surpac.
2. Choose **Help > Table of Contents**.



The help opens.

3. From the Table of Contents choose **Menu Commands > Block Model > Interpolator > Setup**.



4. On the **Setup** page, scroll down to the links detailing each of the tabs on the Interpolator form:

Interpolator

Run	User or Interp Run	Select Access File	Access File ID	Access String Range	Access Description Field	Constraint Access	Access Constraint File	Save Constraint Access	Constraint Access File Loc	Constraint Access File ID	Block Model	Block Model Field	Constraint Interp	Constraint File	Domain Name
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5

The Interpolator form contains 5 tabs with the data entry table on the different tabs designed to allow input of:

- Control Parameters
- Search Parameters
- Search Pass Parameters
- Interpolation Parameters
- Interpolation Output

5. Click each of these links, and review the information on each page.
6. Click each of the remaining Interpolator items in the **Table of Contents**, and review the information on each page.

Setting up for this tutorial

Setting the work directory

A work directory is the default directory for saving Surpac files. Files used in this tutorial are stored in the folder `<shared_files>\demo_data\tutorials\interpolator`.

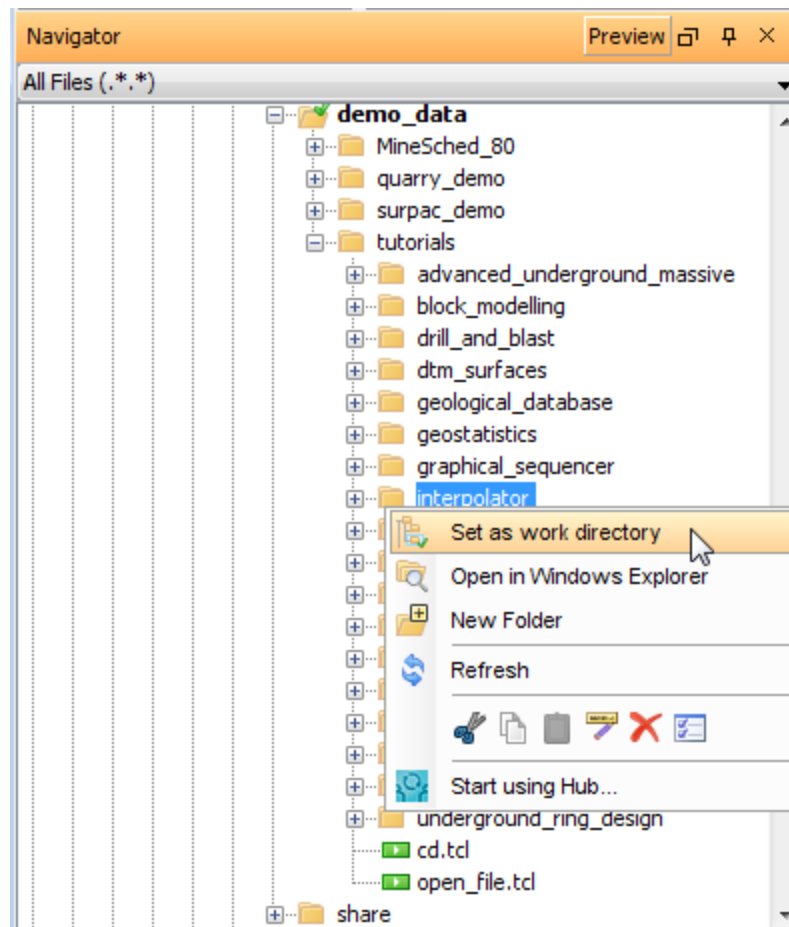
Where `<shared_files>` is the directory in which the Surpac shared files were installed.

In Windows 7, and Windows 8, the default path is

C: \Users\Public\GEOVIA\Surpac\66\demo_data\tutorials\interpolator.

Task: Set the work directory

1. In the Navigator, right-click the **interpolator** folder.
2. From the shortcut menu, select **Set as work directory**.



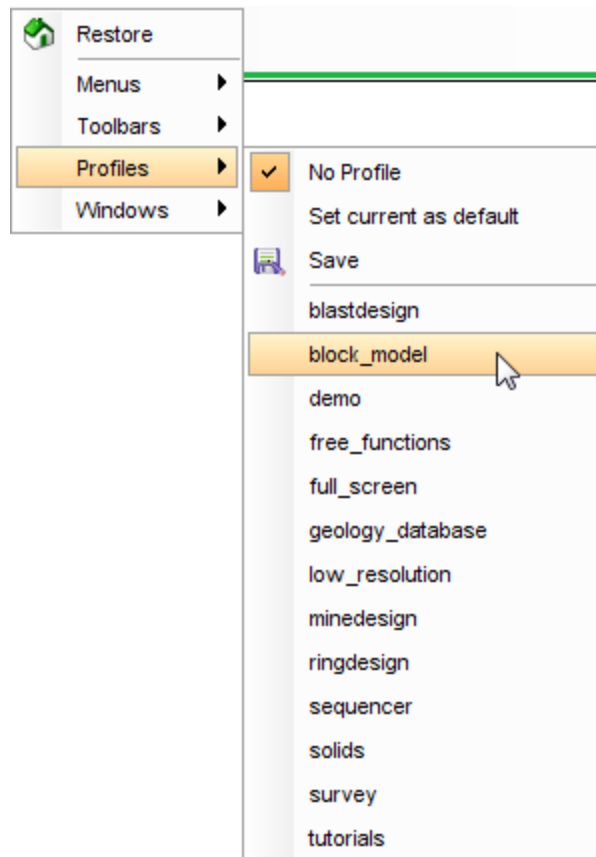
The name of the work directory is displayed in the title bar of the Surpac window.

Displaying the menubar and toolbar

Task: Display the Block Modelling menubar and toolbar

When working with Interpolator, it is helpful to use the block_model profile. This displays the Block Modelling menubar and toolbar.

1. Right-click in the blank area next to the menus at the top of the Surpac main window.
2. From the shortcut menu, choose **Profiles > block_model**.

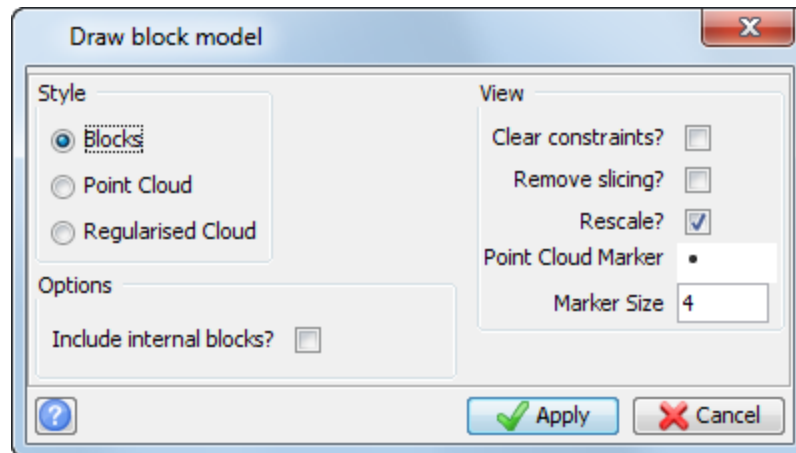


Before running Interpolator

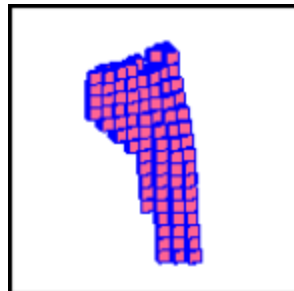
Before running Interpolator

Task: View the data

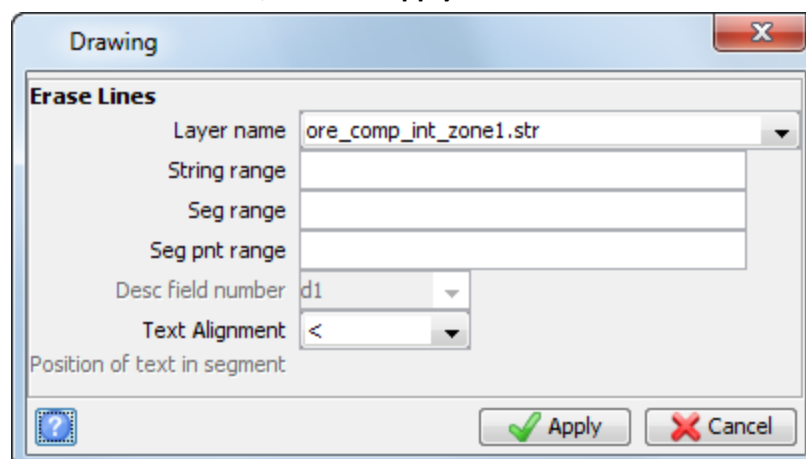
1. Connect to **sanitised.mdl**.
2. Choose **Display > Display block model**.
3. Enter the information as shown, and click **Apply**.



4. Open **ore_zone1.con** in **Graphics**.
The constrained block model is displayed.

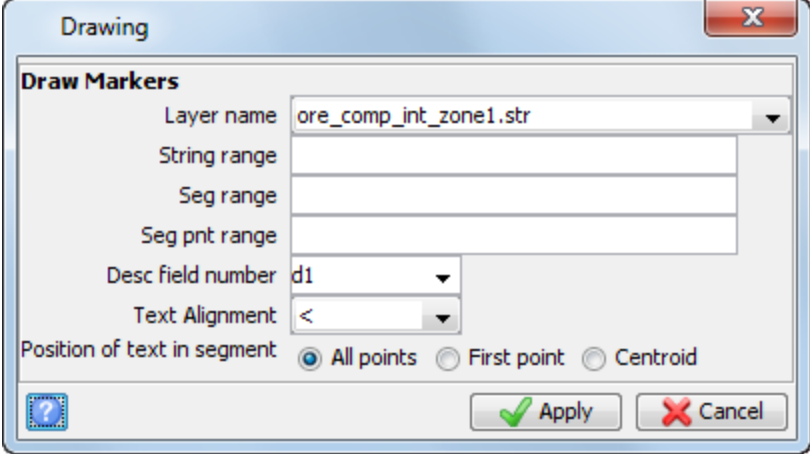



5. Open **ore_comp_int_zone1.str** in **Graphics**.
6. Choose **Display > Hide Strings > As Lines**.
7. Enter the information as shown, and click **Apply**.

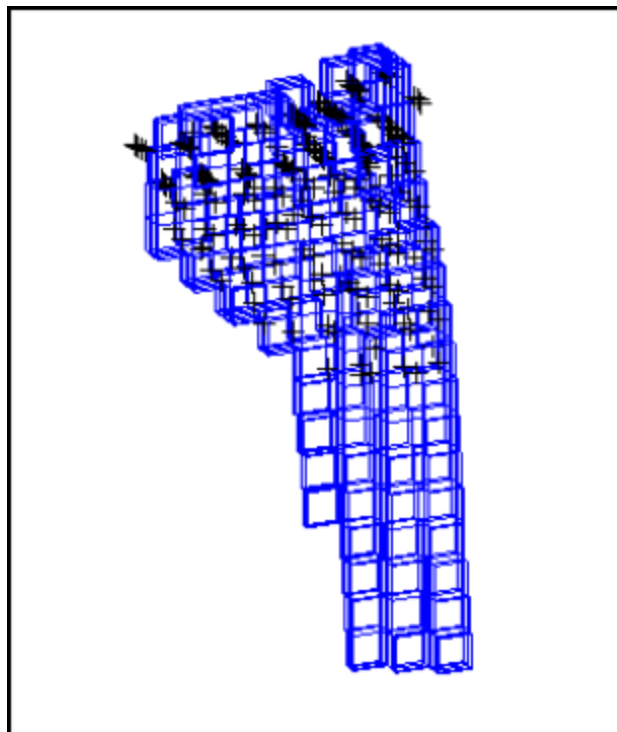



8. Choose **Display > Points > Markers**.

9. Enter the information as shown, and click **Apply**.

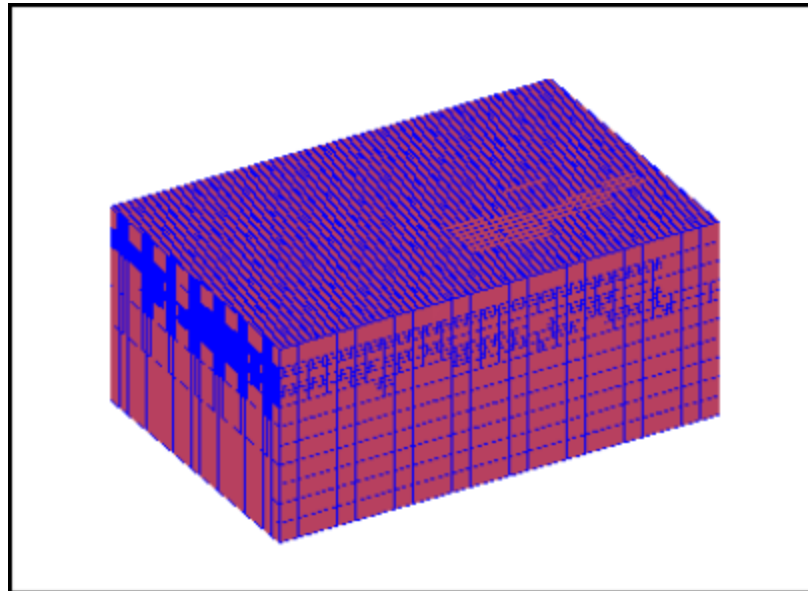


10. Click **Toggle faces**  to turn block model faces off.
The composites that will be used to estimate blocks within this constraint are displayed.



11. Click **Toggle faces**  to turn block model faces back on.
12. Choose **Constraints > Remove all graphical constraints**.

The entire block model is displayed.

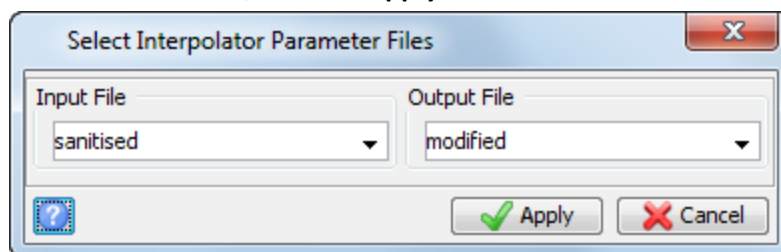


- Repeat all of the previous steps with each of the following constraints to familiarise yourself with each constraint and data set.

Run	String file	Constraint
1	ore_comp_int_zone1.str	ore_zone1.con
2	ore_comp_int_zone2.str	ore_zone2.con
3	ore_comp_int_zone3.str	ore_zone3.con
4	ore_comp_int_zone4.str	ore_zone4.con
5	ore_comp_int_zone5.str	ore_zone5.con

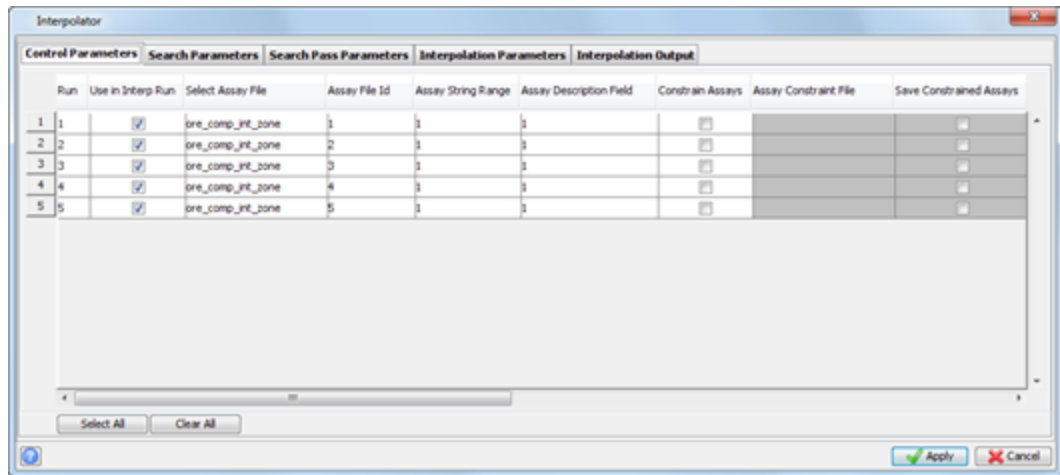
Task: Set up Interpolator

- Choose **Interpolator > Setup**.
- Enter the information as shown, and click **Apply**.



Note: Interpolator requires the name of a file with a **.ipar** extension, which contains all information required for an Interpolator “run”. In this case, you are telling Interpolator to use the existing file **sanitised.ipar**, which contains a set of information for this data set. You will modify a few parameters, which Setup will save to the output file **modified.ipar**. You can use the same name for the input and output files, if you want to overwrite the original file with new data. The **.ipar** files are in text format, and you can view them with any text editor. However, you should only modify them through Interpolator, not using a text editor.

- On the *Interpolator* form, click each of the tabs and use the scroll bar at the bottom to review the information in the tables.



For this example, you will change the discretisation parameters from X: 1 Y: 4 Z: 4 to X: 1 Y: 2 Z: 2

- Click the **Interpolation Parameters** tab.

Note: The discretisation parameters are set to: X: 1 Y: 4 and Z: 4.

Interpolation Parameters			Inter
Order	No of X Desc Pts	No of Y Desc Pts	No of Z Desc Pts
1	1	4	4
1	1	4	4
1	1	4	4
1	1	4	4
1	1	4	4

- Click in each of the fields, and modify them as shown.

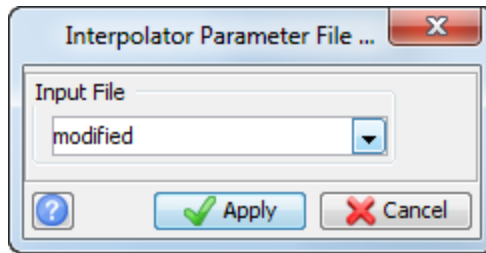
Interpolation Parameters			Inter
Order	No of X Desc Pts	No of Y Desc Pts	No of Z Desc Pts
1	1	2	2
1	1	2	2
1	1	2	2
1	1	2	2
1	1	2	2

- Click **Apply**.

Note: You are performing this task as an exercise to demonstrate how you can change the parameters and store them in a new **.ipar** file. In this case, **modified.ipar** will contain the new values for discretisation points in the Y and Z dimensions, as well as all other data previously stored in **sanitised.ipar**.

Task: Validate parameters

1. Choose **Interpolator > Validate**.
2. Enter the information as shown, and click **Apply**.



Surpac will verify that all information in **modified.ipar** is valid.

When validated, the following message displays in the **message window**: "**Check modified.xls for validation results**"

3. Open the file in Microsoft Excel to review the results.

Validation Report For modified.ipar															
	Run	Location	Assay File Location	String Number	Description Field	Constran Assays	Assay Constraint File	Model Field	Block Field	Constran Model	Model Constraint File	First	Second	Third	Pass Field
5	DATA	1	ore_comp	1	1	1	N	sanitised	au_ok	Y	ore_zone1	N	N	N	NA
6	EXST	Y	Y	Y	205 Non Zero		NA	Y	Y	Y	Y				
7	DATA	2	ore_comp	2	1	1	N	sanitised	au_ok	Y	ore_zone2	N	N	N	NA
8	EXST	Y	Y	Y	250 Non Zero		NA	Y	Y	Y	Y				
9	DATA	3	ore_comp	3	1	1	N	sanitised	au_ok	Y	ore_zone3	N	N	N	NA
10	EXST	Y	Y	Y	650 Non Zero		NA	Y	Y	Y	Y				
11	DATA	4	ore_comp	4	1	1	N	sanitised	au_ok	Y	ore_zone4	N	N	N	NA
12	EXST	Y	Y	Y	890 Non Zero		NA	Y	Y	Y	Y				
13	DATA	5	ore_comp	5	1	1	N	sanitised	au_ok	Y	ore_zone5	N	N	N	NA
14	EXST	Y	Y	Y	227 Non Zero		NA	Y	Y	Y	Y				

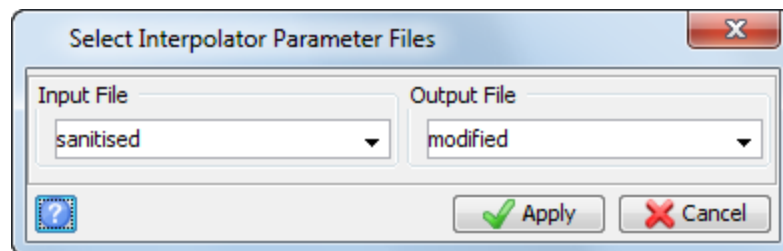
Note: You must close the spreadsheet before performing any subsequent validation checks on this **.ipar** file.

Running Interpolator

Running Interpolator

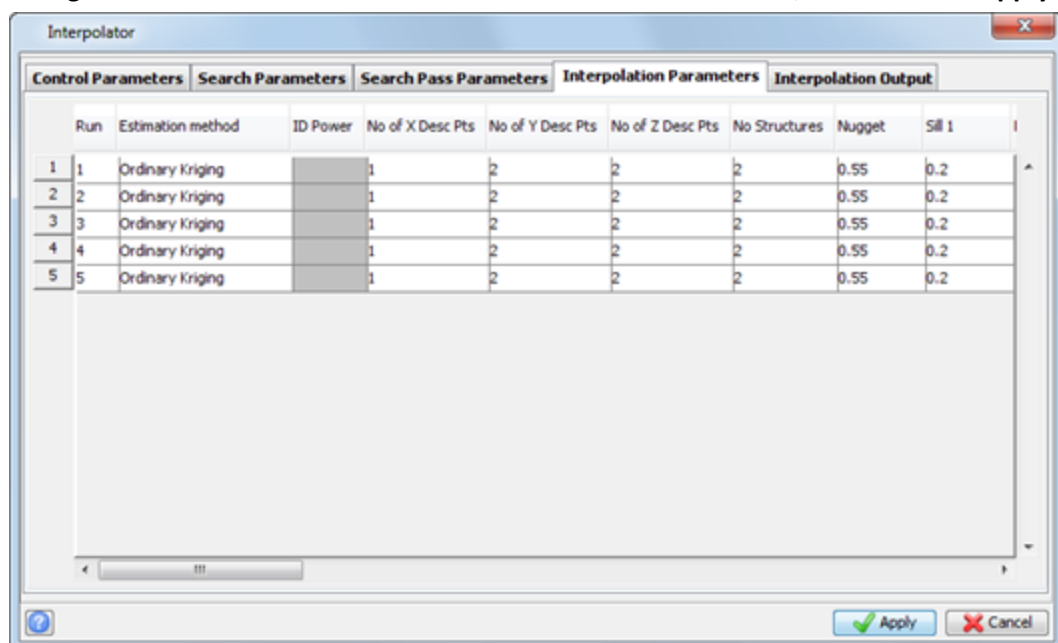
Task: Run Interpolator

1. Connect to **sanitised.mdl**.
2. Choose **Interpolator > Run**.
3. Enter the information as shown, and click **Apply**.



Note: If you used the same name for the input and output files, parameters in the original file can be updated.

4. Click the **Interpolation Parameters** tab.
5. Change the **No of Y Desc Pts** and **No of Z Desc Pts** to **2** for all runs, and then click **Apply**.

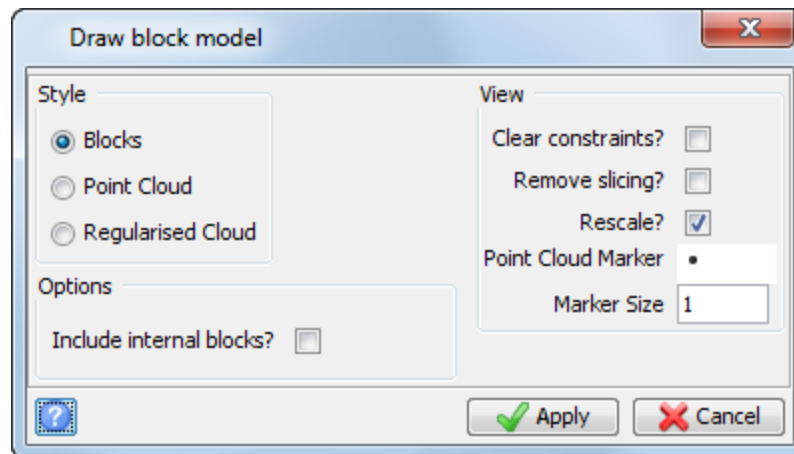


Surpac will now execute each of the “runs”, as defined by the parameters.

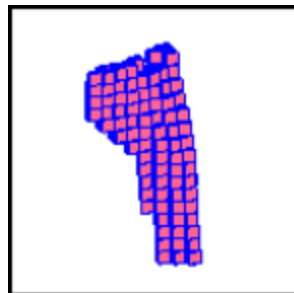
When it is complete, you see a message in the **message window** stating that the model has been saved, for example "**Model c:/documents and settings/all users/GEOVIA/surpac/65/demo_data/tutorials/interpolator/sanitised.mdl saved**", and the block model is closed.

Task: View output

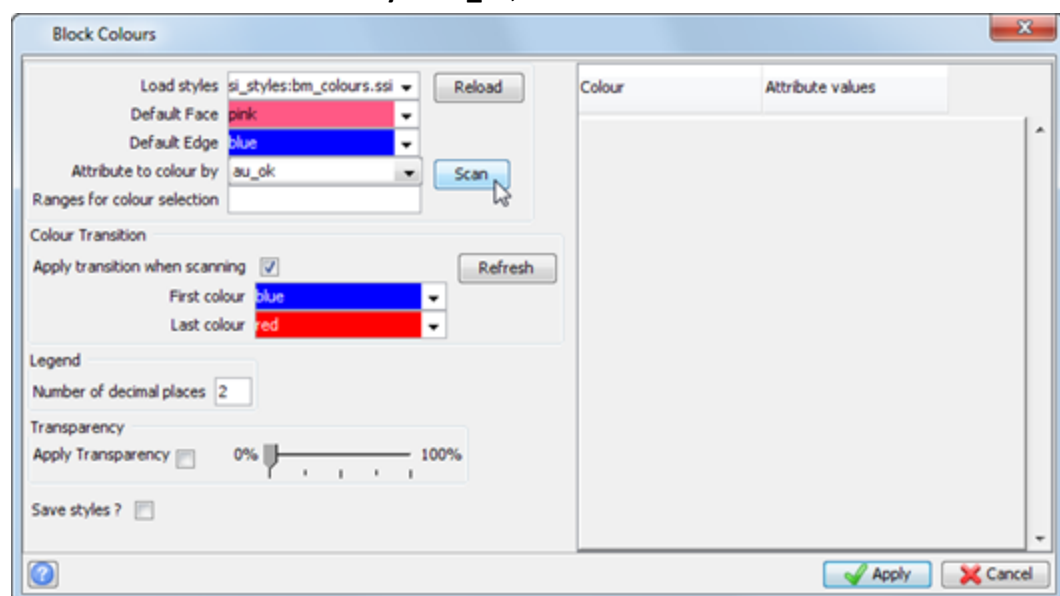
1. Connect to **sanitised.mdl**.
2. Choose **Display > Display block model**.
3. Enter the information as shown, and click **Apply**.



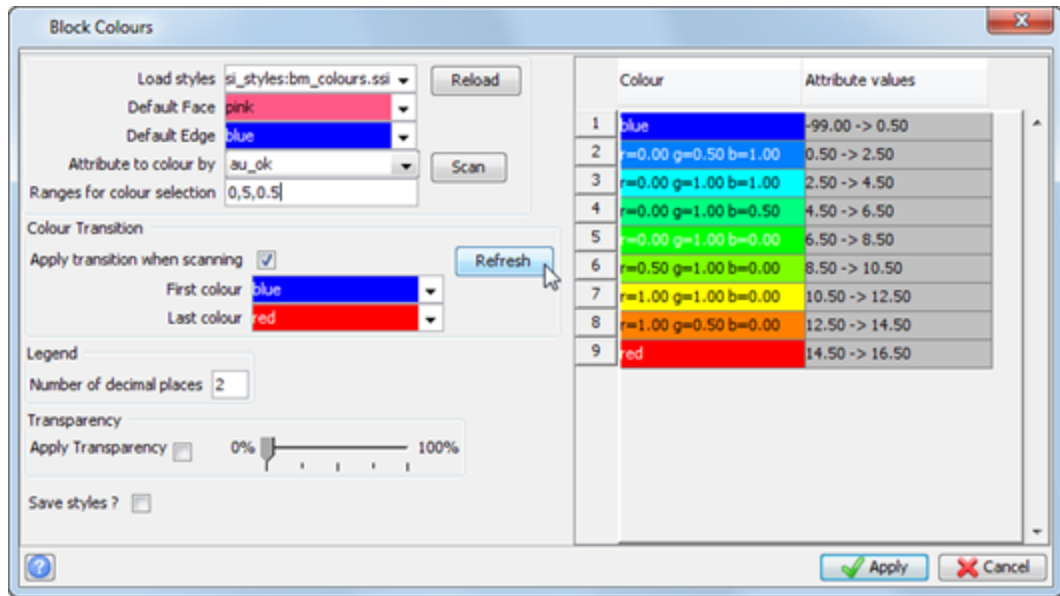
4. Open **ore_zone1.con** in **Graphics**.
The constrained block model is displayed.

**Task: Colour the model by attribute**

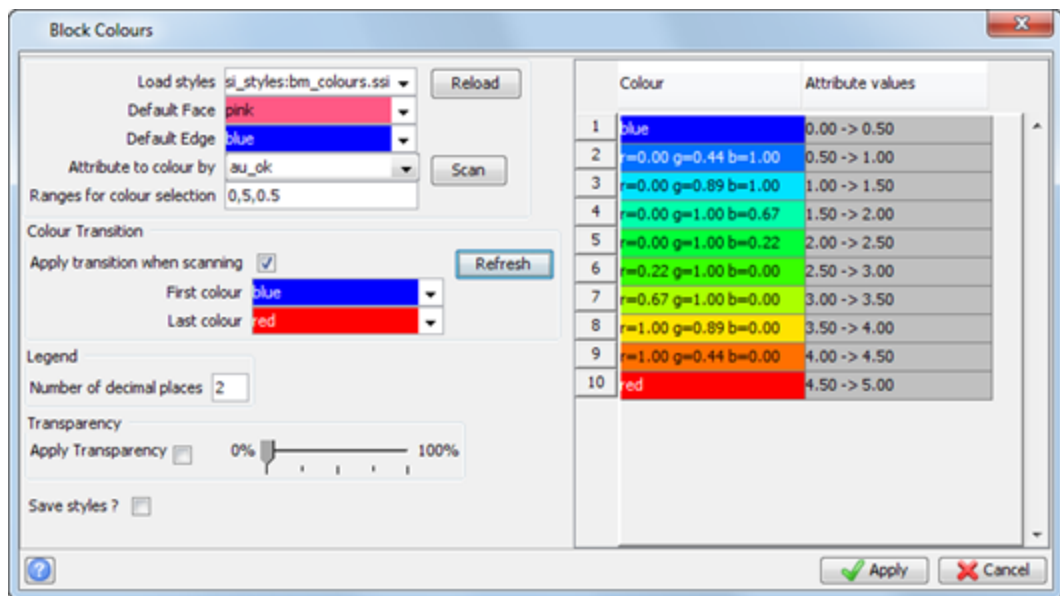
1. Choose **Display > Colour model by attribute**.
2. Select the **Attribute to colour by** to **au_ok**, and then click **Scan**.



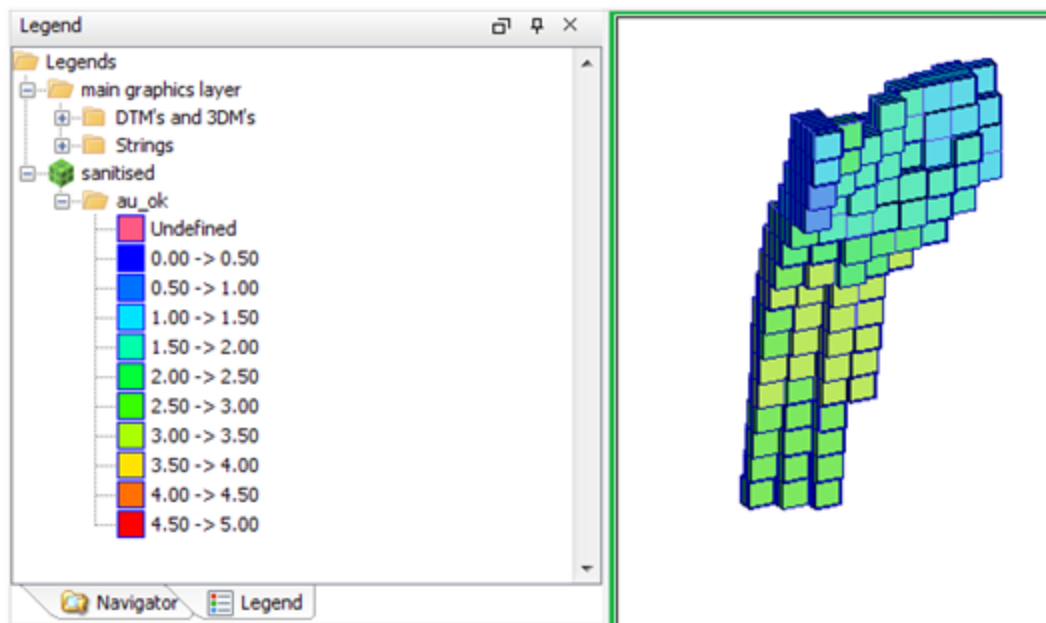
- In the **Ranges for colour selection** field, delete the current range and type **0,5,0.5**, then click **Refresh**.



- Click **Apply**.



The coloured block model is displayed.



Task: Review values for a block

1. Choose **Attributes > View attributes for one block**.
2. Click any block.
The block attribute values are displayed.

Block attributes

Block centroid
 Y 6559902.5 X 421278.5 Z 472.5

Block size
 Y 5 X 1 Z 5

	Attribute	Value
1	au_krgvar	0.031
2	au_ok	1.34
3	avs_au_ok	7.316
4	density	2.80
5	dns_au_ok	3.040
6	mined	insitu
7	nbs_au_ok	35
8	rescat	4

Apply Cancel

3. Click **Apply**.

4. Press ESC.
5. Choose **Block model > Close**.

References

For further information on this topic and related articles, log onto GEOVIA's Knowledge Base at www.GEOVIAsupport.com