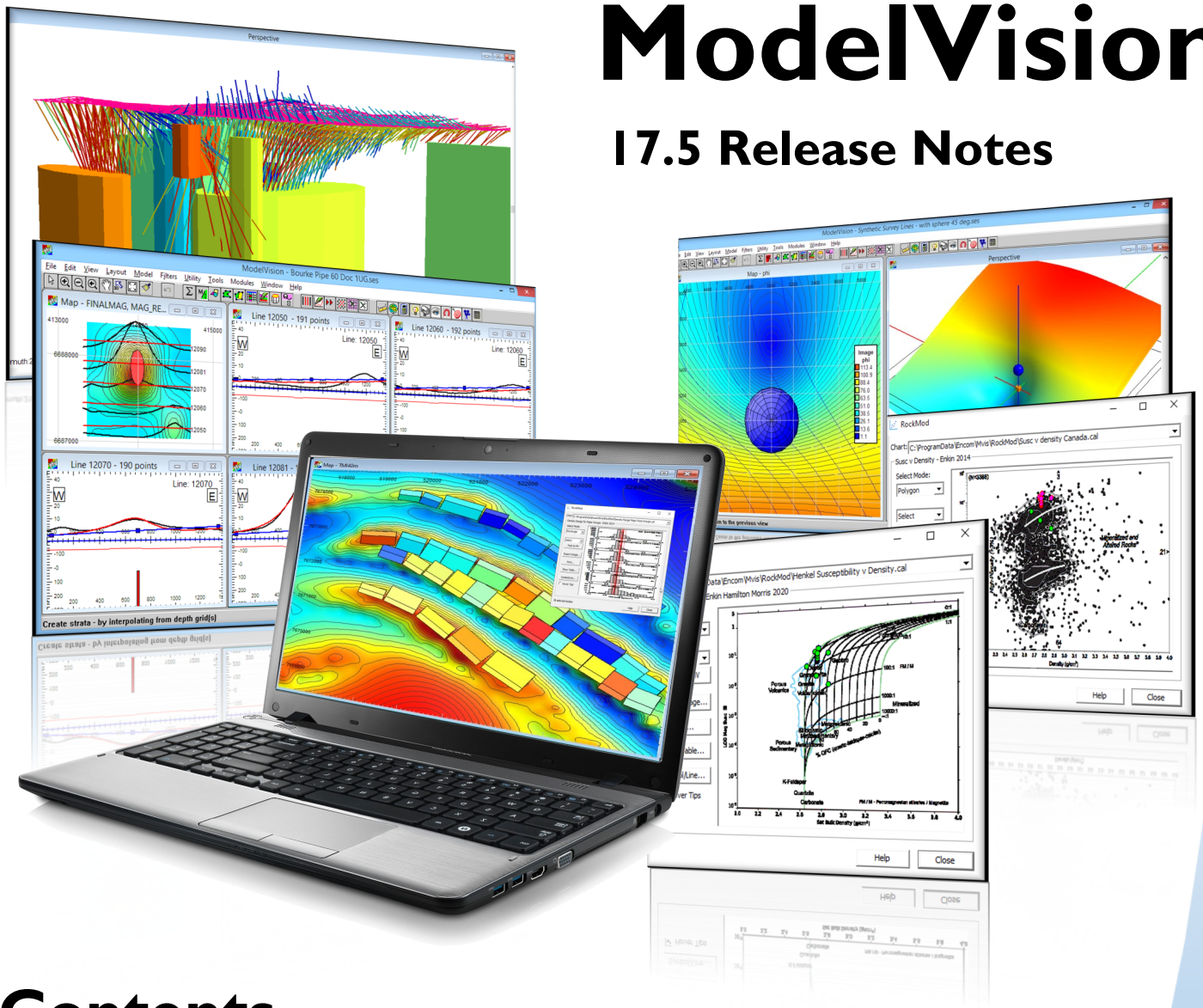
Tensor Research

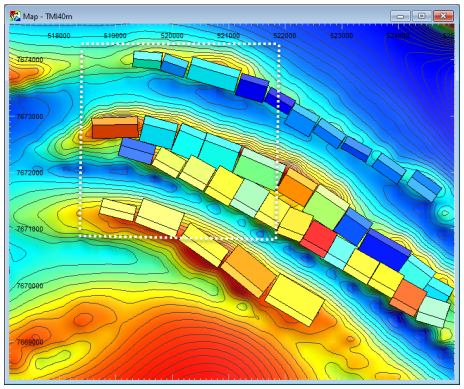
# ModelVision

## 17.5 Release Notes

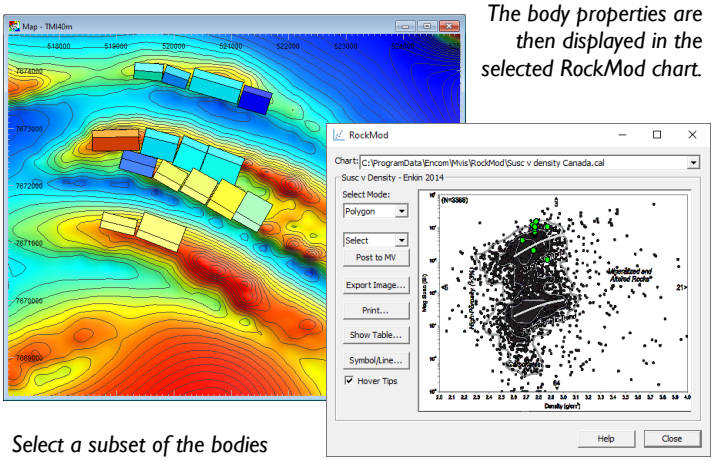


# Contents

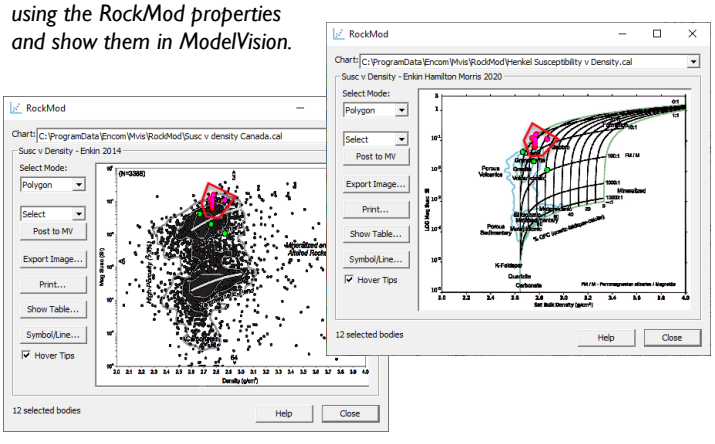
*Use RockMod to select a subset for rock property analysis*

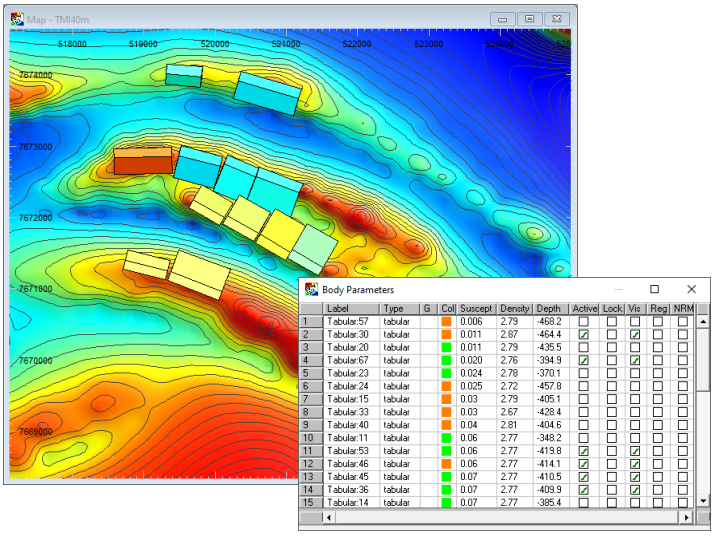


*The body properties are then displayed in the selected RockMod chart.*



*Select a subset of the bodies using the RockMod properties and show them in ModelVision.*





*The subset of bodies are posted in the ModelVision map view (or exported to .CSV) until RockMod is closed.*

# RockMod Improvements

RockMod is a rock properties plugin that allows you to compare magnetic, remanence and density body properties using standard rock property charts. ModelVision inversion produces compact rock properties that can be compared with the bulk rock properties of geological formations unless the thickness of the units is less than the flying height. This means that you can make geological inferences from your inversion data that will help you prioritise targets for further investigation.

## Body Handling

RockMod has the ability to select a subset of bodies in a map window so that the properties of only the selected bodies are passed to RockMod. This allows you to focus on either a subset of a larger group of bodies in a session or bodies pertaining to a geological feature. Then RockMod can be used to analyse the property distribution of the nominated bodies.

To select the bodies, click and hold the left mouse button and drag a rectangle around the bodies in an active map window. Then, open RockMod from the >Tools menu. Note that multiple selections can be performed in a map by pressing the SHIFT key during the selection process.

When RockMod opens, a symbol or line is posted in the rock property chart representing the property for each of the selected bodies. Changes to the body selection will update the RockMod chart when the map window is open.

In RockMod a subset of the presented bodies can be created using a Select Mode of either individual body selection (Point) or a range of bodies/points using the Rectangle or Polygon option.

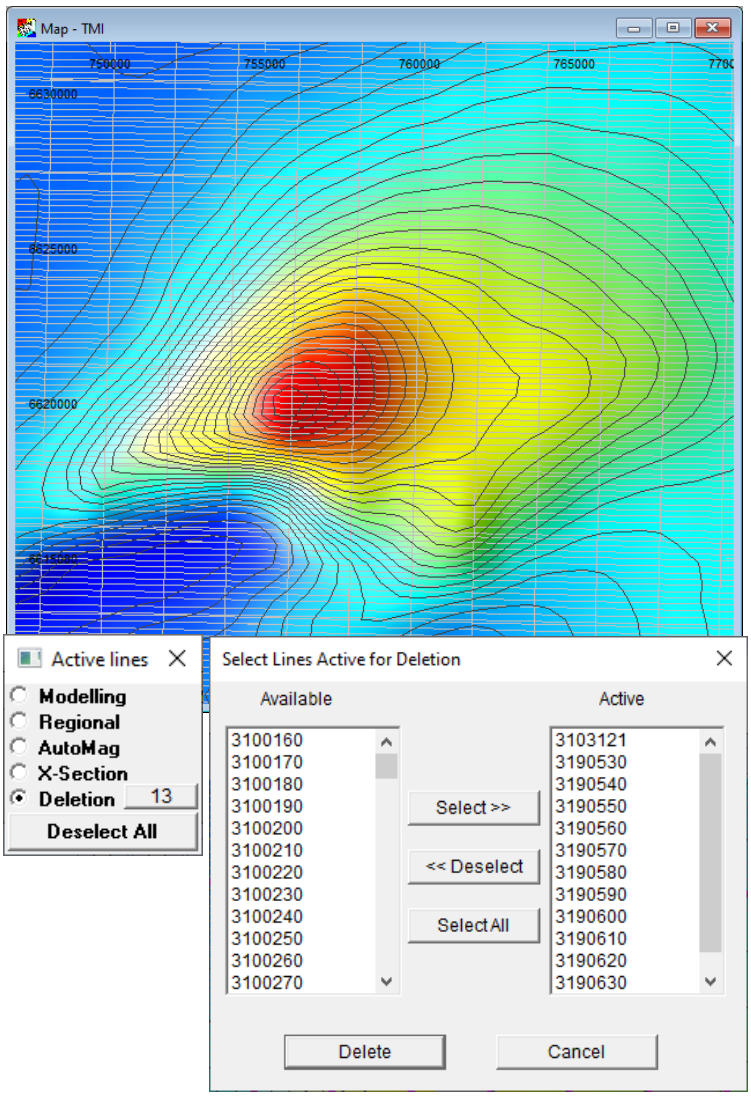
## Body Posting

Select a group of property symbols in RockMod and show just those bodies in ModelVision or export the property information to a .CSV file.

The ModelVision map windows are updated with only the selection made in RockMod. All other bodies are automatically hidden and made inactive. Use the body parameters table to reset the current view or reactivate hidden bodies.

The status of all bodies present in the ModelVision session is updated to reinstate all the hidden bodies when RockMod is closed.

For further information on how to use RockMod refer to the ModelVision User Guide in the \Documentation folder.




## Active Lines - Deletion

A line **Deletion** option has been added to the **Active Lines** floating toolbar of ModelVision to interactively select lines in a map for permanent deletion from the current session. This tool is especially useful for removing unwanted tie lines or truncated survey lines .

Open the Active Lines tool from the ModelVision toolbar or select the Tools>Active Line menu. Ensure that the map window with survey lines displayed is active (selected). Select the **Deletion** option on the Active Line floating toolbar and drag the cursor (hold down the left mouse button) across the lines that you want to delete. The selected flight lines change colour. If you perform the operation again on the same series of lines, the operation behaves as a status toggle and the lines are deactivated for deletion. The line counter button in the Active Lines toolbar will update with the total number of selected lines marked for deletion.

*To proceed with the deletion, click the button showing the number of selected lines and the Select Lines Active for Deletion dialog will appear. To restore any lines selected for deletion, select the lines from the active list and press the* ***Deselect*** *button. When you click the* ***Delete*** *button, all lines and associated data in the Active list will be removed from memory.*

**Note**: The **Active Lines** toolbar is used to graphically select lines for modelling, regional, AutoMag and cross-section window creation. The term "active line" refers only to modelling, regional/residual and AutoMag calculations that become active once the lines are selected. This option allows you to focus computationally intensive calculations on a subset of a full survey.

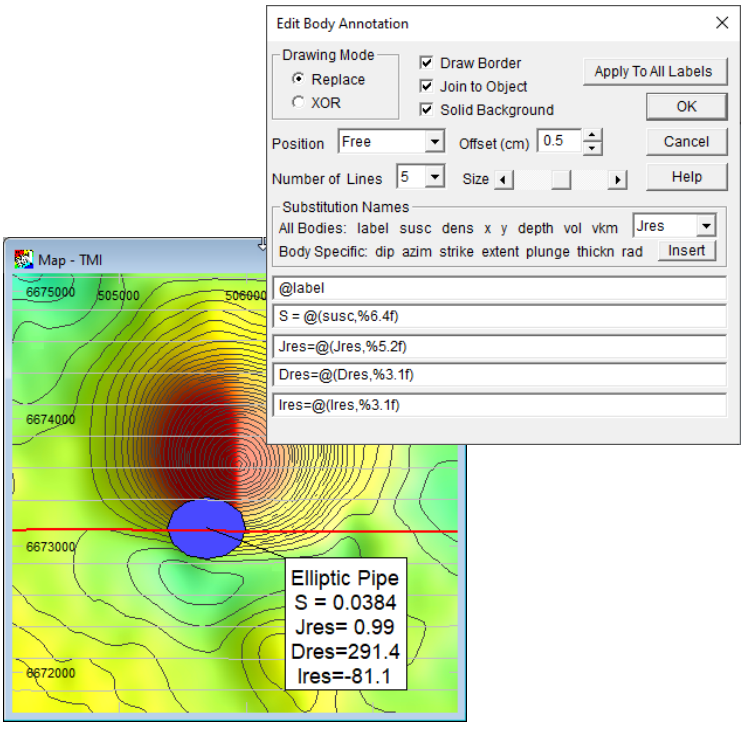
## Body Label Improvements

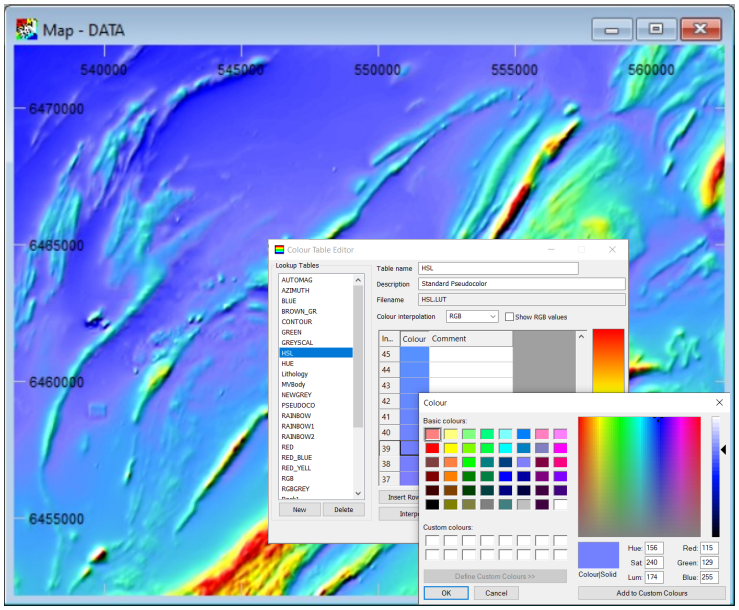
You now have access to all body properties for labelling and more control over label positions.

In addition to Susc, Den, X, Y, Depth, Volume etc, we have added remanence and resultant magnetisation parameters, including ARRA, Jres, Dres, Ires, Jnrm, Dnrm, Jind, Dind and Iind. The "**Insert**" button creates formatted text for the selected parameter in the current text line.

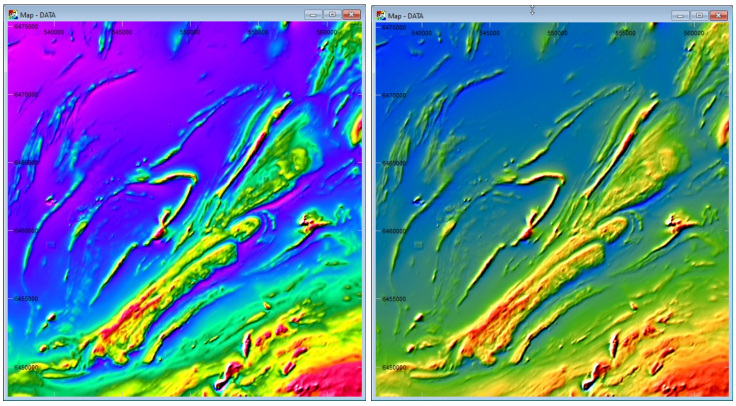
For example, if you want to insert the remanence parameter apparent resultant rotation angle (ARRA), select ARRA from the pull-down menu followed by the **Insert** button. It will automatically generate the formatting text **ARRA=@(ARRA,%5.2f).**

The number of lines for a body label has been extended from 3 lines to 6 to assist with detailed evaluation of magnetic remanence.

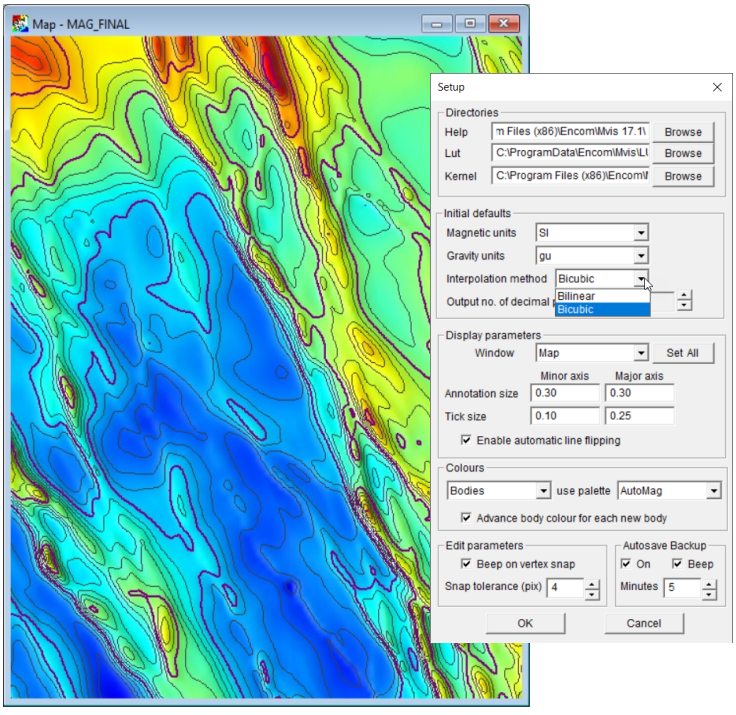





*The Colour Table Editor can be used to enhance colour maps to detect minor structural detail.*



*TMI grid image with standard rainbow colour map (left) and with the CET-R2 colour map (right). The latter helps distinguish structural detail commonly blurred in the green-blue data ranges.*




## Colour Table Editor

Historically, colour lookup tables (LUT's) such as Rainbow and Pseudocolour have been the default in many software applications for displaying geophysical gridded data. These are popular because they are visually appealing and generally give an acceptable range of colours for interpreting data. However, once closer inspection of gridded data is required for interpreting finer geological details, it may be difficult to find a colour map suitable.

ModelVision has a **Colour Table Editor** tool accessed from the Utility menu for the creation or customisation of colour maps. Such maps can be useful for the enhancement of structural information which can be often obscured by the dark blue ranges in standard pseudo colour maps.

ModelVision LUTs use the ER Mapper format by default, but MapInfo "clr" and Oasis montaj "tbl" formats are also supported. If you create a new LUT file it will be stored with the set supplied at installation and is available to be used for the display of bodies, contours, grid images, etc.

## CET Perceptually Uniform Colour Maps

ModelVision now supports the suite of CET (Centre for Exploration Targeting) Perceptually Uniform colour maps (https://colorcet.com) for grids, point data and bodies. CET LUTs provide alternative colour scales for geoscientists that have difficulty perceiving colour contrast in standard LUTs. The CET Perceptual Colour Maps are organised according to their attributes, ranging from Linear, Diverging, Rainbow, Cyclic, Iso-luminant, and Colour Blind. More information on these can be found at:
https://colorcet.com/gallery.html

## Grid Contouring

The display of contouring for grid data has been improved in various ways to achieve a more professional result. The contour dropout control has been improved so that if the display of heavy contours is active then only the minor contours will be dropped. The minimum contour decimation interval now allows a decimation interval of 1 where 3 was previously the lowest decimation.

## Grid Resampling Methods

The ability to change resampling methods between bicubic (default method) and bilinear is now available from the Setup dialog (File menu). There are many places in ModelVision, including the QuickDepth module, where the bicubic resampling method is important so this is now used by default but can be changed to bilinear in the Setup. Note that if this is changed all utilities which perform resampling in ModelVision are affected, such as AutoMag, QuickDepth, grid imaging and shading, calculator and the UBC Model Builder.

# ModelVision Improvements and Fixes

| Improvements | Description |
|---|---|
| Point dataset handling | Improvements have been made to the handling of Point datasets, including improved symbol colour modulation, using point mode in the calculator utility (limit of 80 point channels), and labelling fonts. |
| Improved NRM, Demagnetisation and Anisotropy User Interface | There are complex rules behind the way the dialog responds and the relationships that can be computed such as demagnetisation. These have been improved e.g. Q was changed from a rock property to being computed from the remanent and induced magnetisation vector amplitudes. Susceptibility and Q cannot be changed independently of each other. |
| First grid contour interval | A problem with displaying the first contour interval in a map window has been resolved. |
| Self-demagnetisation threshold was too high | ModelVision did not allow self-demagnetisation corrections for bulk susceptibilities at or below 0.1256637 SI (or kbulk ≤ 0.01cgs). The threshold has been lowered to 0.005 SI units. |
| QuickDepth data preparation | When preparing data for QuickDepth an "**Abort**" button has been added to the options in the message that appears when analysing survey lines containing nulls. |
| Increased number of significant figures for Body Parameters Table | The number of significant figures for susceptibility in the body parameters table has been increased. |
| Added NRM to Body Parameters Table | An NRM column has been added to the Body Parameters Table for individual bodies. |
| **Fixes** | **Description** |
| Jnrm window behaviour | The window for the Jnrm vector was set to zero when the NRM tick box was turned off but now the existing NRM vector (and Q) is displayed but greyed out when NRM is turned off. |
| Standard inversion on NSS | Inverting on the Normalised Source Strength channel caused ModelVision to crash. |
| Body Parameters table "hot keys" | The "U" and "D" keys weren't working to rearrange bodies in the body parameters table. |
| Duplicating a body name bug | If a body was renamed to the identical name of an existing body an error message to correct it couldn't be exited. |
| Interactive Help and User Guide | The interactive help and User Guide document for ModelVision were not available in time for the 17.0 release of the software. |
| Deactivating Anisotropy | When anisotropy was active and you wished to revert to isotropic susceptibility both the reported susceptibility in the Aniso and NRM dialog windows were not being reset to the bulk susceptibility (defined as the arithmetic mean of the principal susceptibilities, i.e. kbulk = keff = (k1+k2+k3)/3). This also affected the reported Q ratio because the intensity Jind of the Jind vector has not been updated. You can now remedy this by physically entering the required isotropic bulk susceptibility in the NRM dialog. This can be a completely new value. |
| NSS Computation | ModelVision can now compute NSS from the tensor in line datasets. |
| GDA coordinate projection zones | GDA94 and GDA2020 projection zones were incorrectly named. |
| ModelVision installation | The ModelVision installation can now be aborted when the MI-Discover 64bit warning appears. |
| Points Annotation font corruption | Font type in the Points Annotation dialog became corrupted when changing the font. |
| Point mode colour stretch | When clipping the colour range, the top colour was not displayed correctly in the map. |
| QuickDepth solution counter | The Total Solution Counter for QuickDepth was not updating for a deleted solution. |

# ModelVision Support & Updates

Your annual support and updates payments are allocated to the development of new features, improvement of existing features and support for issues that you may encounter on your own projects. ModelVision is now a large system of tools and wizards designed to solve practical exploration problems across a broad spectrum of potential field applications. For the major components we have prepared **tutorial datasets and documentation** so that you can develop your skills prior to working on your own project.

ModelVision has a comprehensive **interactive help** system, but you should also be aware that there are some very helpful resources in the FAQ's section of our website www.tensor-research.com.au/faqs-and-knowledge-base and the documentation area accessible from the ModelVision Help>Guides menu:

**User Guide** - ModelVision User Guide with over 700 pages of practical information on using ModelVision
**Interpretation** - ModelVision Geophysical Interpreters Guide a 100 page booklet on magnetic and gravity geological solutions,
**Tutorials** - ModelVision document with over 12 step-by-step instructions on how to use ModelVision for modelling data.

Use the email address support@tensor-research.com.au to register any questions or problems that you may have and we will respond with a solution or a request for more information.

If you purchased ModelVision from one of our **international resellers** (www.tensor-research.com.au/our-company/resellers) who were selected for their expertise in geophysical modelling and inversion, then you can also contact them directly for assistance.

# YouTube Video Tutorials

There are a number of useful YouTube videos available from our website www.tensor-research.com.au/tutorials to provide an overview of some of the key applications of ModelVision. These are intended to help users better understand and learn the workflow processes required for a successful modelling outcome in ModelVision. The latest videos available from the www.tensor-research.com.au/tutorials page of the Tensor Research website include:

- RockMod - Plotting Rock Properties in ModelVision
- Regional Calculation and Handling in ModelVision
- QuickDepth for Rapid Magnetic Source Estimation
- Using the Speed Toolbar
- Using the Active Lines Toolbar
- Importing Points to Bodies in ModelVision

Other videos previously available in the YouTube Video Library on our website are:

- Target Wizard in ModelVision
- Normalised Source Strength in ModelVision
- Constrained Gravity Inversion
- 3D Magnetic Component Vectors
- AutoMag Depth Estimation

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