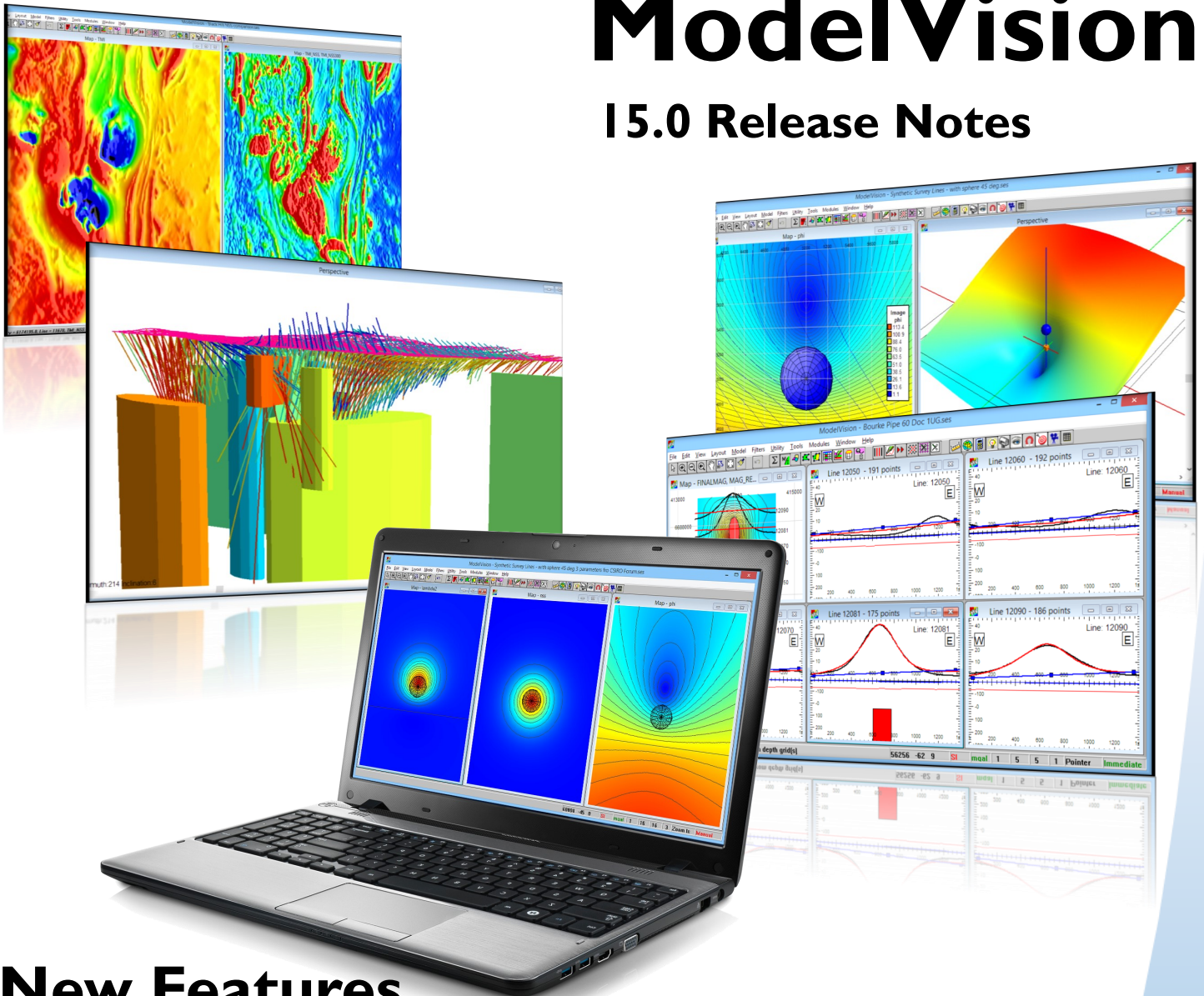


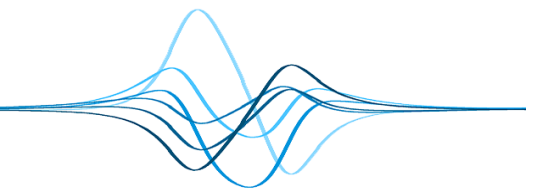
ModelVision

15.0 Release Notes



New Features

- **Normalised Source Strength filter (NSS)** [2](#)
- **Resultant magnetisation deconstruction** [2](#)
- **Inversion constraints now saved in sessions** [3](#)
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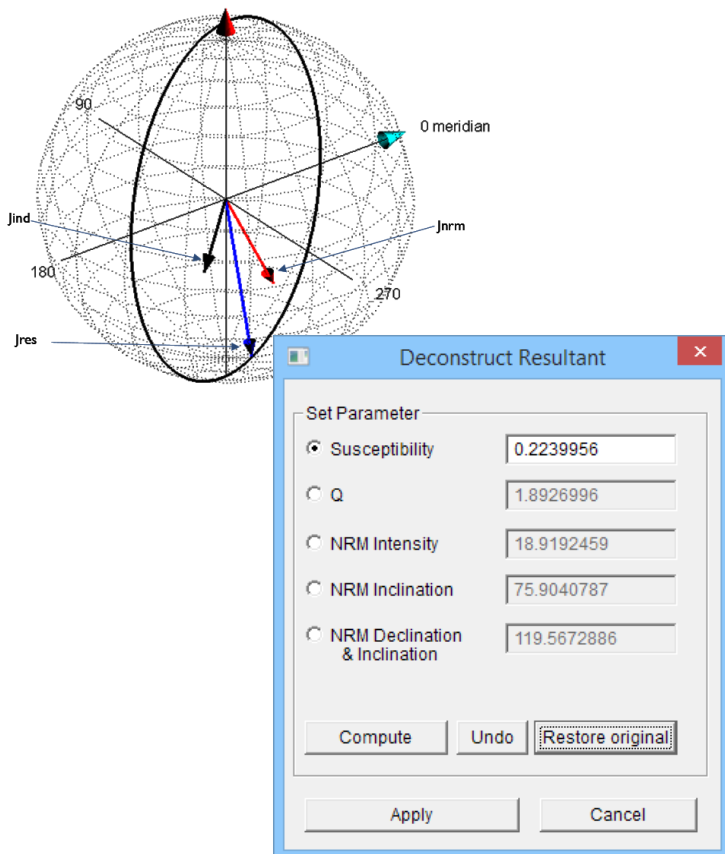
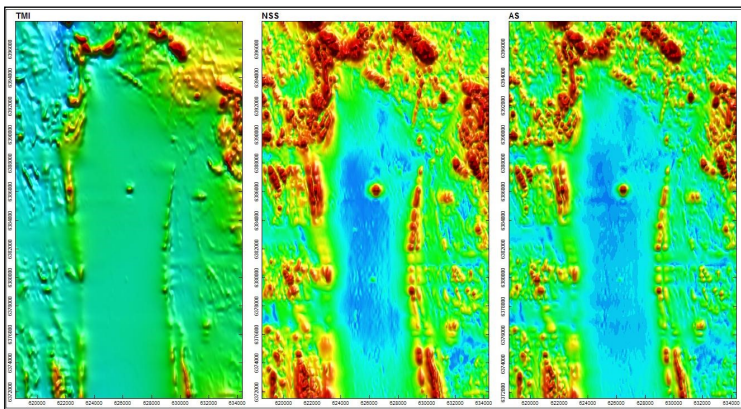
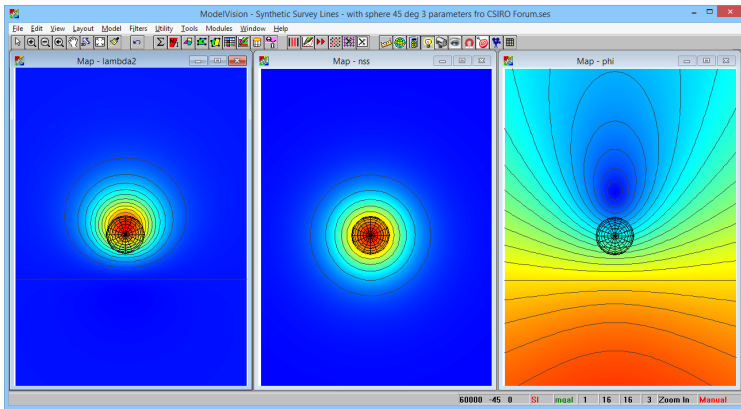


Normalised Source Strength NSS

The normalised source strength parameter NSS developed by Dr David Clark at CSIRO is derived from eigenvector analysis of the magnetic tensor. It is virtually independent of the magnetisation direction of the target and the peak defines the horizontal location of the centre of magnetisation. We also compute the second eigenvalue plus the co-inclination angle which can be used to derive the magnetisation inclination and declination

The normalised source strength parameters are supported for forward modelling, inversion and grid filtering. The special grid filter automatically calculates the tensor grids from a TMI grid and outputs three parameter grids.

While there are many similarities between normalised source strength and analytic signal, NSS images show better geological coherence and less noise in low amplitude areas.

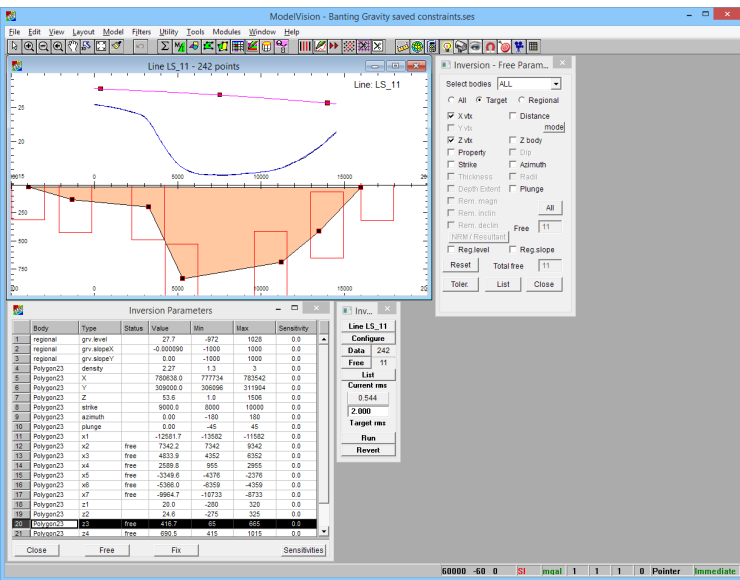
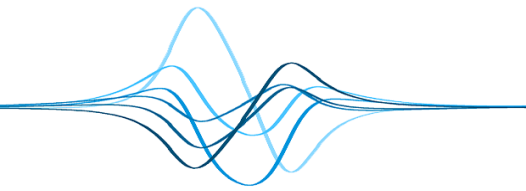


Resultant Magnetisation Deconstruction

The resultant magnetisation vector is the vector sum of the induced magnetisation and remanent magnetisation. ModelVision inversion is able to recover the resultant magnetisation vector as a unique attribute of the magnetic source rock for an isolated magnetic anomaly. Of course that does not provide us with a unique solution for the magnetic susceptibility or natural remanent magnetisation (Jnrm). You need at least one more parameter to deconstruct the resultant magnetisation vector into its two components. The new tool has five different methods for deconstructing the resultant into magnetic susceptibility and remanent magnetisation:

- Susceptibility
- Q Koenigsberger ratio
- NRM intensity
- NRM inclination
- NRM declination and inclination

The five options are accessed from the Deconstruct button on the NRM tab of the Body Properties dialog.



Save Inversion Constraints

Parameter range free constraints are part of standard inversion and provide the user with intimate control over the progress of an inversion. Until this release, the constraints were lost when exiting an inversion. For simple projects this is not a problem, but when it comes to complex projects that may be worked on over multiple sessions, the constraints needed to be reset.

Now you can save the constraints with a session and come back to where you last finished.

Don't forget that you can visualise the x, y constraints in a cross-section and edit the bounding rectangles by selecting a corner and dragging it to a new location. If you find a polygon vertex hard up against one edge of the rectangle, then you may need to change the bounds or insert an additional point.

3D Vectors New Applications

New controls have been added to make it easier to display vectors in 3D for a range of applications that included drill-holes and flight lines. In the case of drillholes, 3 component fluxgate systems are available for both data display and forward modelling.

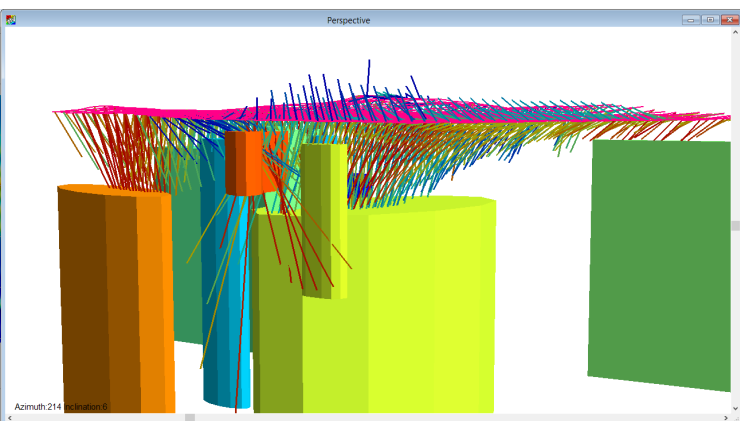
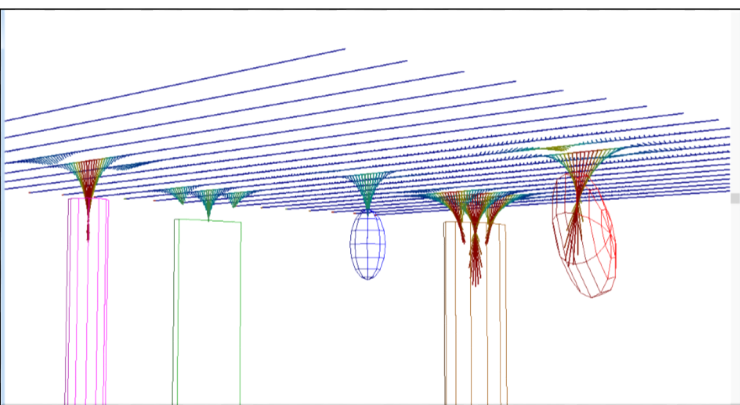
A new application is the use of three component vectors derived from the total magnetic field grid to point to the anomalous magnetic property distributions.

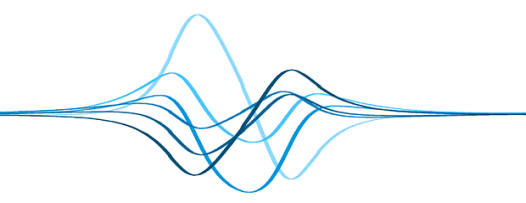
The first example here shows the results for a range of body shapes and the second shows the three component vectors for a 3D inverted porphyry complex.

The vector components grids are resampled onto the original survey flight lines and then scaled and colour coded by the vertical component. New features allow you to decimate the vectors and flight lines to reduce clutter in the 3D display.

Note that the new features are also available in map vector layers.

The 3D porphyry model and vector display is provided courtesy of Alice Queen Pty Ltd.





EGB Registration Files

EGB files are generated for cross sections in Discover PA (formerly Profile Analyst) and Discover for MapInfo. This means you should be able to load BMP files generated by these packages directly into ModelVision. When reading Discover PA EGB files, check the format of the associated bitmap as it must be in BMP format. Use an image conversion tool to convert a JPEG or PNG file to BMP format and edit the EGB text file to reflect the change in file name.

Note that ModelVision uses depth below sea level as its reference, while Discover PA and Discover use elevation above sea level.

ModelVision also generates EGB files from cross-section windows for 3D visualisation in Discover PA and Discover 3D for MapInfo Professional.

Line Proximity Detector

The left section of the status bar provides information on the location of the cursor in x, y or x, y, z space depending upon the context and works in all graphics windows apart from the perspective view. To the right of the cursor information, the line name is displayed for the line that is closest to the current cursor position. This is very helpful when zoomed in and you want to identify a particular line for modelling. The numeric values of any grid displayed in the map view will be displayed after the line name.

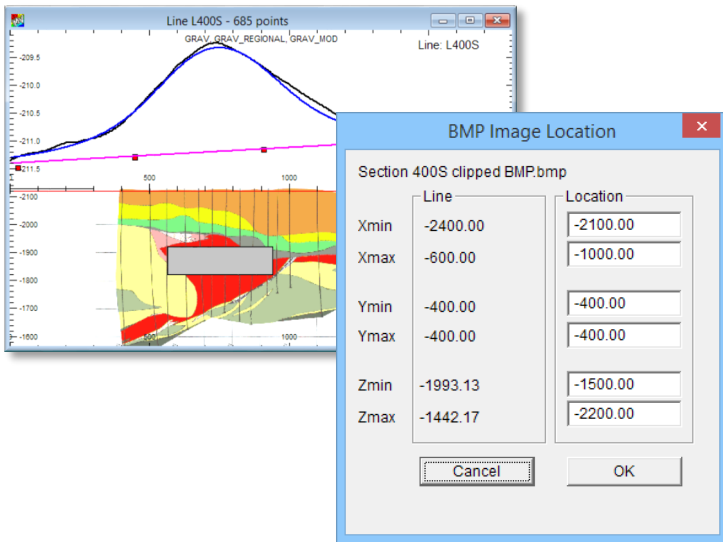
Target Wizard Improvements

The Target Wizard is being used for modelling and inversion of complex anomalies such as this porphyry system where you can investigate individual anomalies or the whole system as part of the Target workflow.

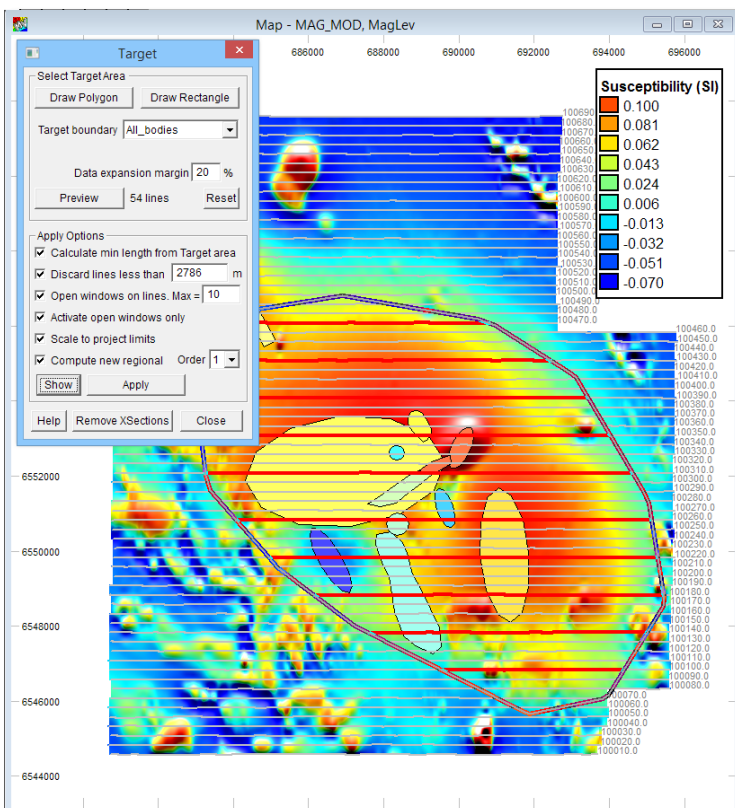
Rather than model all lines within the active zone, you can now limit the modelling and inversion to the open windows. The selected lines are highlighted within the polygon so that you can experiment with the number of lines that you want opened. Only the highlighted line segments will be activated for modelling.

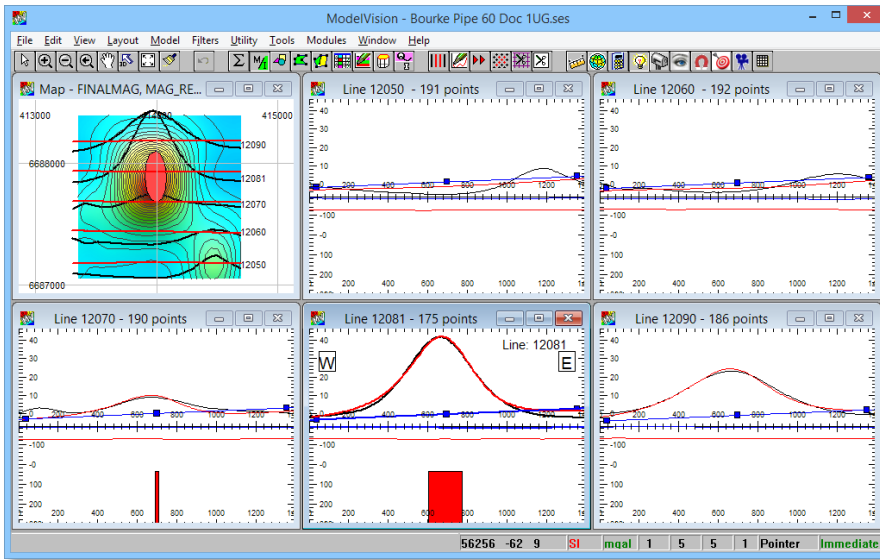
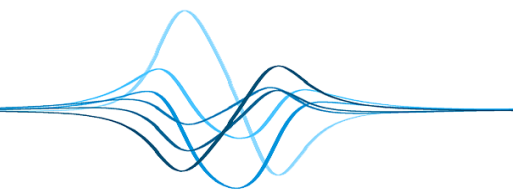
If you have previously worked with the selected sub-session and saved a regional, you can restore the original regional to save recomputation.

The new Apply STYLE to All option also increases the efficiency of the modelling and inversion process, by standardising the cross-sections to suit your specific requirements.



x = -1741.4, y = -583.5, Line = L600S, MAGIG = -52, GRAV = -210, GRAV = -210





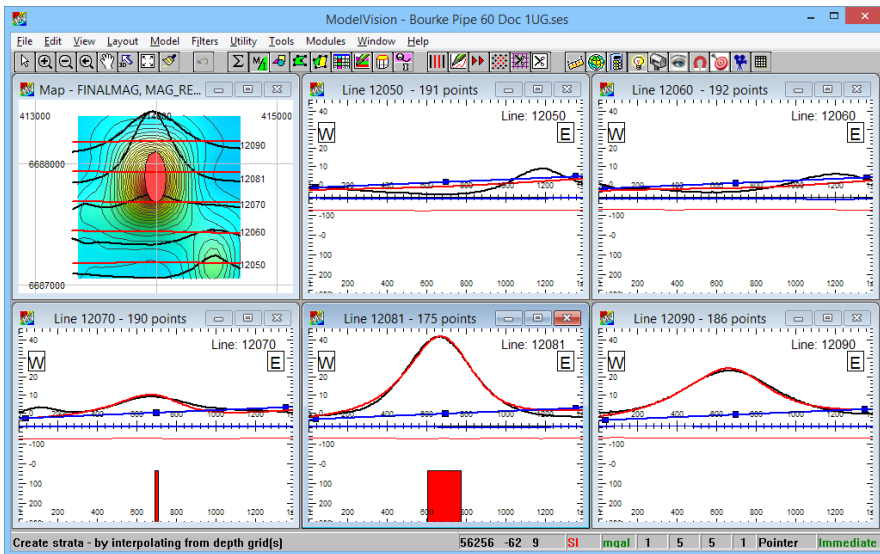
Global style change for Cross-sections

Once you have scaled all your sections, you may want to change the style of the graphics as well. To do this set up one section the way you want, use the right mouse click on the section and select the option **Apply STYLE to All**. In the figure below, the line thickness, EW indicators and line name were added to all sections.

At present the following attributes can be propagated across all open sections with the **Apply STYLE to All** function.

- Curve colour
- Curve thickness and all other curve attributes
- Curves on or off (e.g. regional)
- Regional Fixpoints
- Line Name
- Axis Annotations
- Orientation Labels
- Track Titles
- AutoMag points
- AutoMag similarity coefficient traces

Auxiliary traces and in-line filters are not propagated by this function.

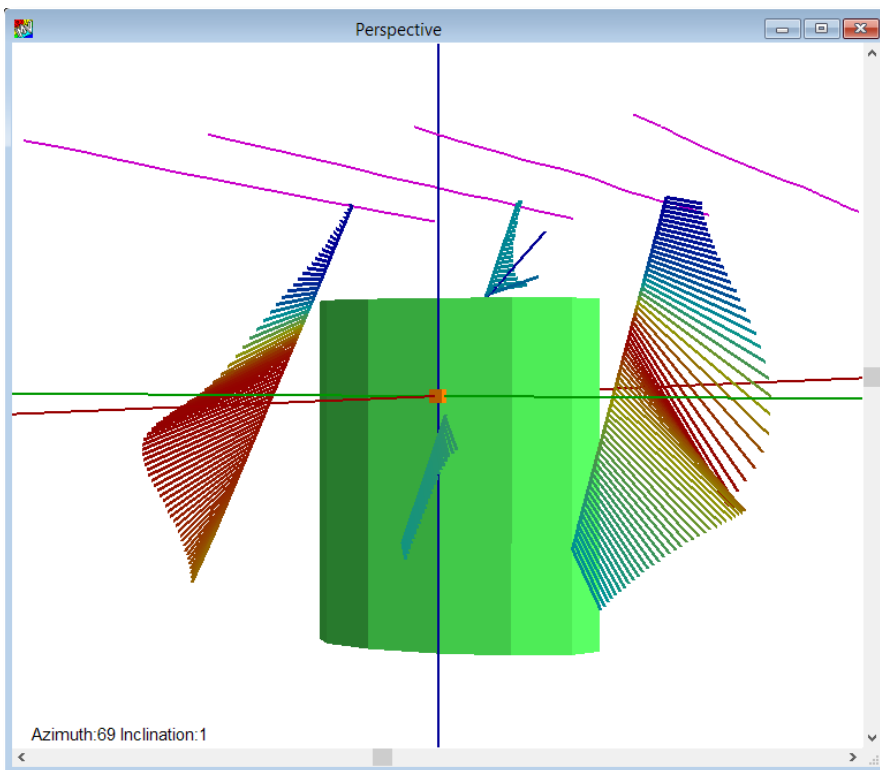


3D Drillholes




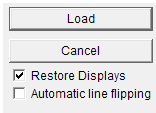

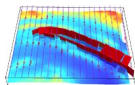




ModelVision provides 3D perspective support for the drillhole datatype. This is particularly useful for the display of geochemical samples properties, magnetic susceptibilities and densities.

Geophysicists are routinely collecting three component magnetic drillhole data to investigate rock properties. Of particular interest is the ability to detect near misses. You can then use this information for comparison with synthetic model results.

You can change the colour modulation, line thickness and vector sample density in the new release. This helps to optimise the presentation style.



ModelVision Improvements and Fixes

Improvements	Description	
Polygons	Polygon boundaries are created by the Target Wizard, 3D Extrusion Wizard and Remanence Calculator. These polygons can be added selectively to any map display.	
UBC Model Builder	The UBC GRAV3D and MAG3D can now be installed in separate directories with environment variables that identify the two directories.	
Back Door Features	Registry settings that turn on hidden features can now be accessed for functions such as the Match Average Regional, UBC to TKM model generator and window priority. Find out more in our new User Guide Appendix H.	
Line Flipping Status	Cross-sections that have their orientation flipped from their default setting have their status preserved in the session file. A check box has been added to the Open Session File dialog that allows you to turn this on/off at load time. If Automatic is turned on, then this will reset all flipped lines to the default behavior.	
Cross-section defaults	Cross-section default parameters such as orientation labels, line name, labels are now saved and used next time you open a section.	
New installation and Licence Manager	The installation of ModelVision has been changed from Pitney Bowes to Tensor Research. The Licence Manager is now specific to ModelVision, but compatible with Pitney Bowes geophysical and geological products.	
Fixes	Description	
Zoom too far	On long cross-sections used in regional mapping, polygons can develop narrow slivers that require detailed zooms to separate adjoining layers. When zooming too far, a low level library error may be invoked that causes an infinite looping of the XVT error message. This message has now been trapped, allowing you to exit gracefully from the problem.	
AutoMag	AutoMag crashed when the total number of solutions exceeds an internal limit. Storage is now allocated dynamically. AutoMag solutions were not flipped when line flipping was activated. Save AutoMag coefficients for all lines is the default behaviour so that the Next Line options behaves as expected.	
Load body into empty session	Loading one or more bodies into an empty session before loading data caused ModelVision to crash.	
Wrong vertex moves during edit	Occasionally the wrong vertex would move when editing a cross-section.	
Active points	Select All or Deselect All does not work when in Select Outside or Deselect Outside mode.	
2D Filters	FFT filter dlls appear in the same list as convolution filters and failed to run. They are automatically removed from the selection list.	
Grid Utility	Crashes if you select File>Import>Grid>Reproject	
INI file corruption	On some computers/operating systems, the mvproj.ini file was being corrupted. This affected the default project parameters and also the Target Wizard session restoration.	
Body display mode during inversion	Bodies were not retaining their display mode setting during inversion, revert or body undo.	
Visibility status	Stacked profiles were not retaining their visibility status when restoring a session.	
IGRF map	The map of the world in the IGRF calculator that is part of the FFT grid filters uses the ER Mapper ecw library to allow zooming to a high level of detail. Previously, the ER Mapper libraries were not properly installed.	
Extrusion Wizard	Fixed a problem relating to using TAB vector files.	



About Release 15.0

This release is our first solo version of ModelVision since the end of our joint venture with Pitney Bowes and we all look forward to helping you get more from your magnetic and gravity interpretation projects. We have developed a new product brochure that you will find in your installation, but you can also download it from our website at www.tensor-research.com.au.

While ModelVision is a mature product with a 30 year heritage, it seems that there is now more to do than when we first started. Developments in potential field theory, faster computers and better graphics make so much more possible. For example some big developments in recent years include joint inversion for multi-channel data such as airborne gravity gradiometry, magnetic components and full tensor squid magnetometers. Also, practical developments in the interpretation of remanent magnetism have opened up new geological possibilities for the study of rock properties and target anomalies. This release includes a new capability for deconstruction of the resultant magnetisation vector into its component parts of induced and remanent magnetisation.

Improvements to the Target Wizard make it feasible to undertake large scale parametric inversions on complex anomalies using large segments of a magnetic survey. The new ability to save parameter constraints makes it possible to work on inversion projects over many sessions.

We would like to thank our colleagues at Pitney Bowes for their helpful assistance during the transition and their support over the last four years of our joint venture. The new Licence Management System was developed by Pitney Bowes and is currently compatible with their other geophysical and geological products, but specific to ModelVision and the UBC Mesh Designer and AutoMag. A new installation system has fixed a number of problems encountered in earlier releases and should improve your operating environment. Operating system changes have produced a few problems on some computers and we have addressed these as they arose.

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 documentation area that are 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.

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.

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