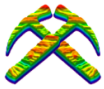
New Features Within RockWorks2020

Last updated 5/15/20



Contents

Introduction

This document details some of the new features and changes to the RockWorks software product relative to the previous RockWorks17 version. This release represents 1.5 million lines of code that has been significantly redesigned during the last three years.

Interface

Redesigned RockWorks Screen Layout

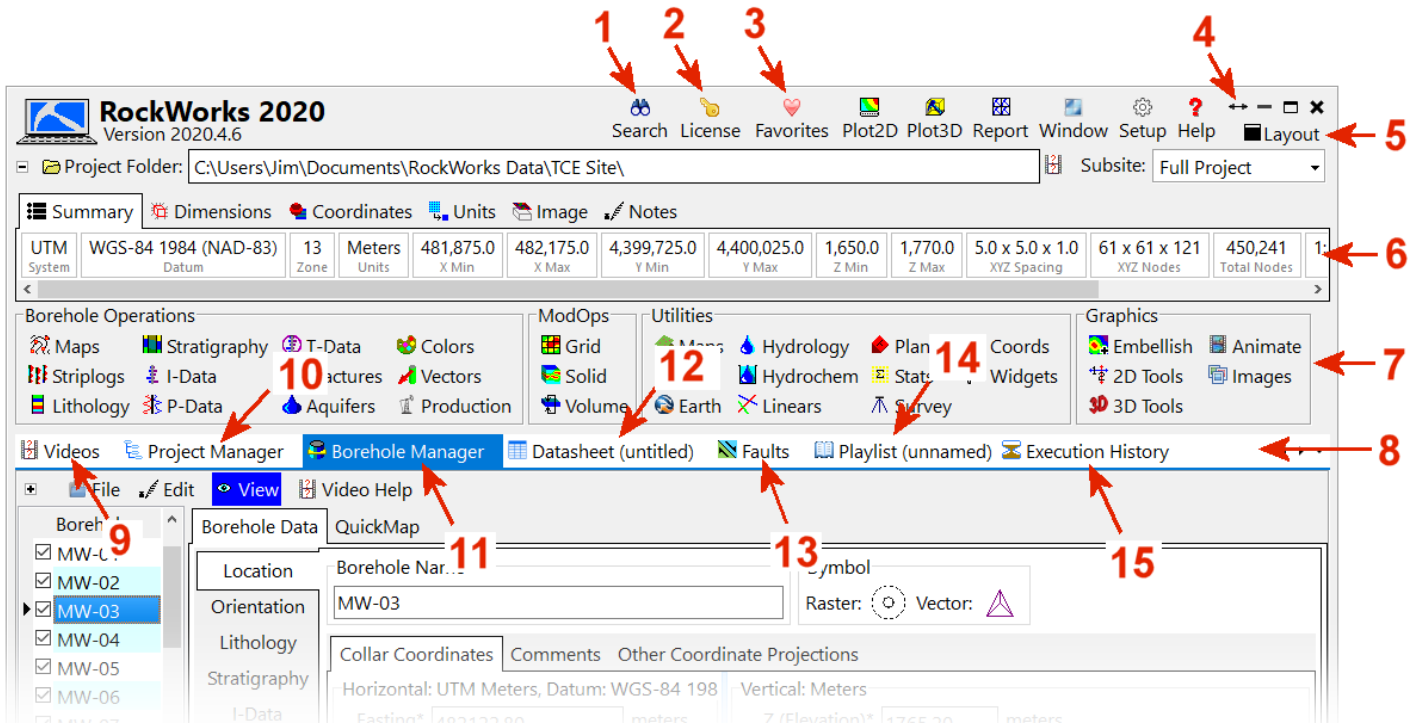


Figure 1. The Main RockWorks Menu

New features within the main RockWorks menu (Figure 1) are described as follows:

1. New Search Option: Find the right program for the right job.
2. New Licensing Automation: Eliminate the phone calls and emails.
3. New Favorites Option: Create your own menu list of frequently-used programs.
4. New Full-Expand Option: Stretch the main RockWorks menu across multiple screens.
5. New Layout Options: Save and retrieve the main menu layout configurations.
6. Expanded Project Dimensions Summary: View more information at a glance.
7. Redesigned/Consolidated Application Menu: No more switching between menus.
8. New "Dockable" Tabs: View more by dragging tabs within the Windows desktop.
9. New Videos Tab: Access the entire library of RockWorks instructional videos.
10. Enhanced Project Manager: Entire page is now draggable to other locations on the desktop.
11. Borehole Manager Tab: New features including database comparisons.

12. Datasheet Tab: Redesigned to show column attributes along right side of dialog.
13. New Faults Tab: Redesigned to manage all faults in 3D as a database.
14. New Playlist Tab: Automate multiple tasks in an interactive fashion.
15. New Execution History Tab: Review program history to diagnose problems.

Instructional Video: https://youtu.be/mKBf1j718_c

Application Menus

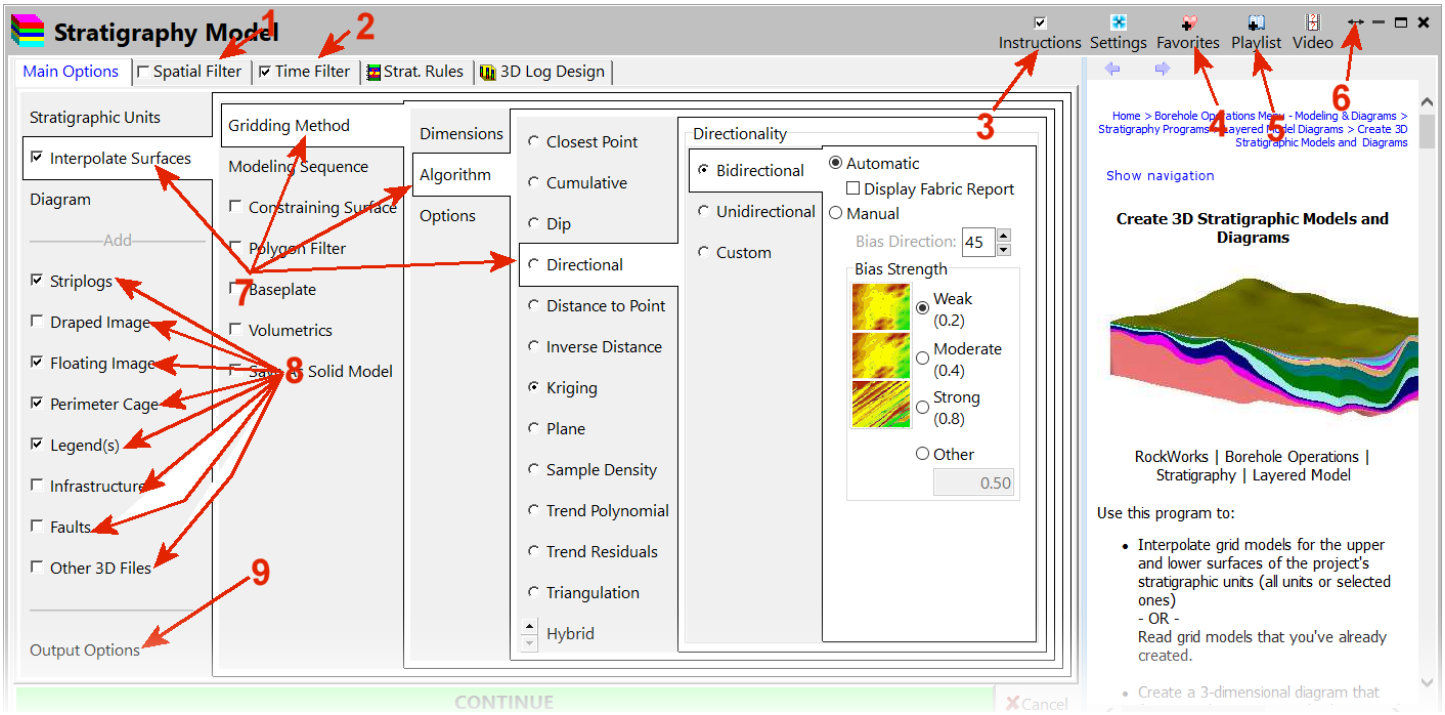


Figure 2. Application Menu

New features within all application menus (Figure 2) are described as follows

1. Nested Tab Menus: Replaces hard-to-read expanding/collapsing menu trees.
2. Expanded Spatial Filtering: Moved to the top of menu and now applied to most applications.
3. Expanded Time Filtering: Moved to the top of menu and now applied to most applications.
4. New Instructions Checkbox: Enables / disables help messages.
5. New Favorites Button: Adds current application to Favorites List.
6. New Playlist Button: Adds current application and menu settings to Playlist.
7. New Full-Expand Option: Stretch the application menu across multiple monitors.
8. New Output Embellishments: Additional diagram “add-ons” removes extra steps.
9. New Output Options: Export diagrams and reports directly to the desired output format.

Nested Tab Menus

The RockWorks17 tree-style application menus have been replaced with a nested tab hierarchical menu structure (Figure 15). These new menus are considerably easier to understand and they provide additional space for documentation and example diagrams.

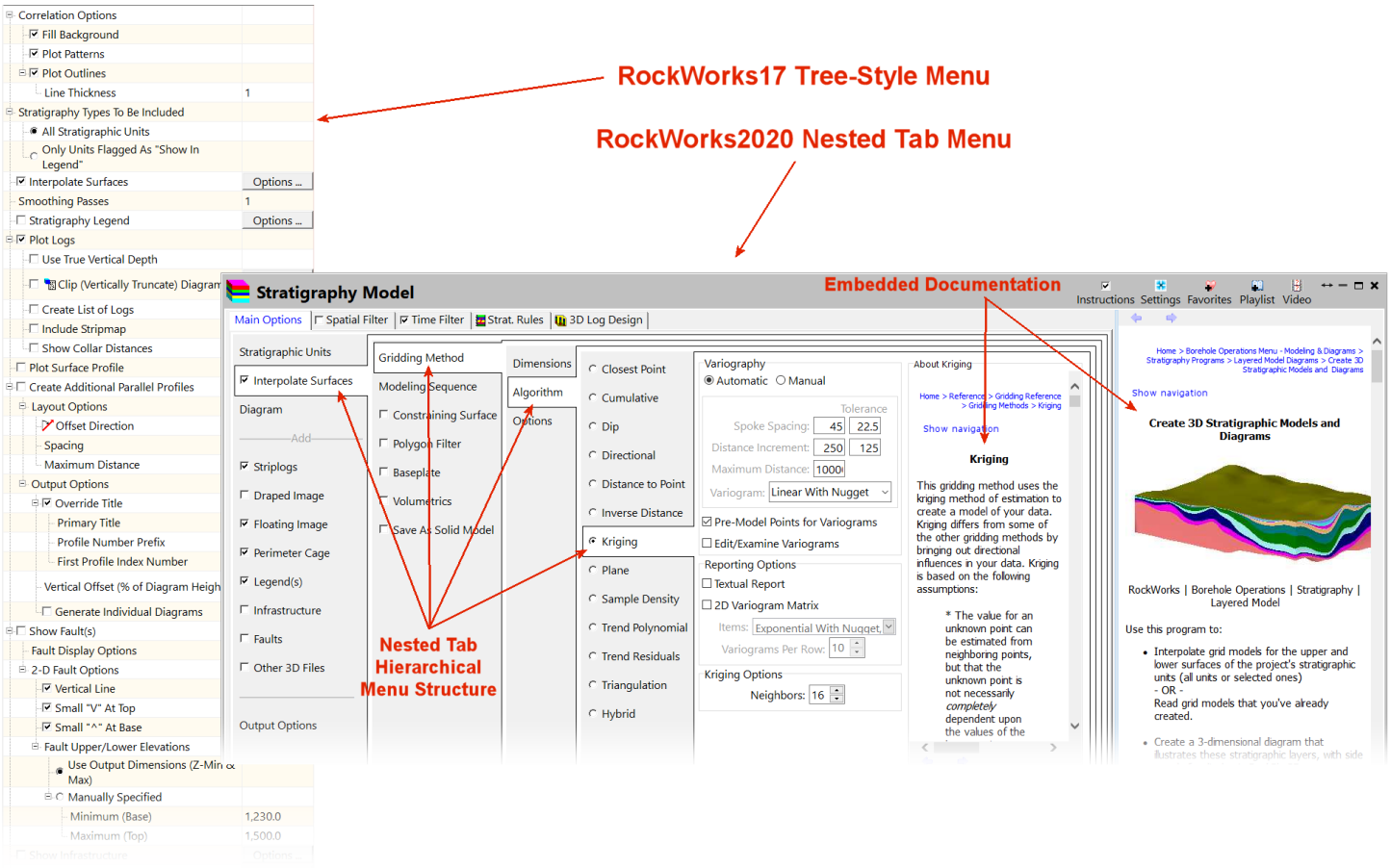


Figure 3. RockWorks17 Tree-Style Menu Versus RockWorks2020 Nested Tab Menu

In addition, the font dimension in all menus have been increased from 9-points to 12-points to increase readability on the latest generation of high-resolution/small-screen laptop computers.

Instructional Video: https://youtu.be/TzQ-jiAdJ3A

Search Tool

A new Search option (Figure 4) lists the programs that contain the search terms. Items may be launched and/or added to the Favorites list from within the Search Results list.

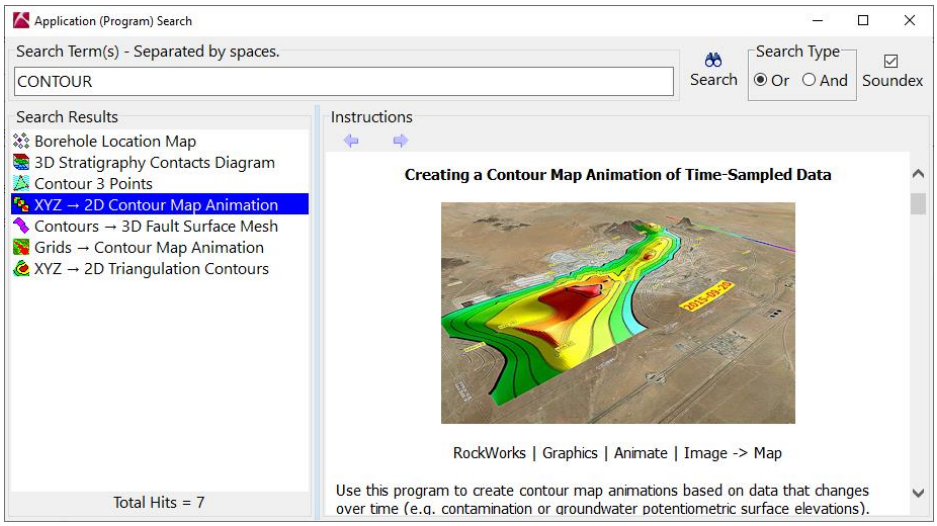


Figure 4. Search Menu

Instructional Video: https://youtu.be/xZqUHHyKXYs

Favorites List

Clicking on the new Favorites button within any application menu (Figure 5) will add that program to the list of items that are displayed when the Favorites button within the main RockWorks menu (Figure 6) is clicked.

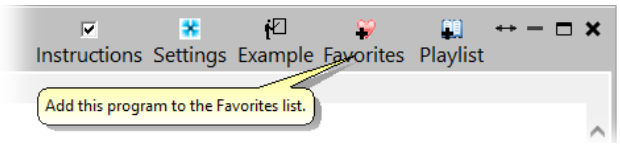


Figure 5. Favorites Button Within Application Menu

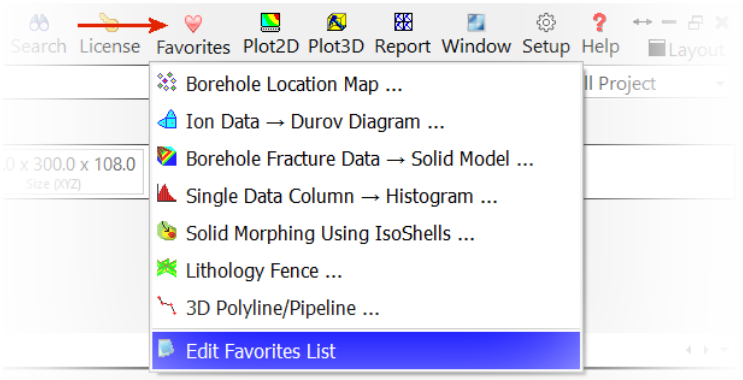


Figure 6. Favorites List Within Main RockWorks2020 Menu

Video Instructions: https://youtu.be/Ut-yewFo1do

Application List

The Application menus have been redesigned and consolidated into a single panel of options with pull-down menus (Figure 7) which provides access to over 432 programs.

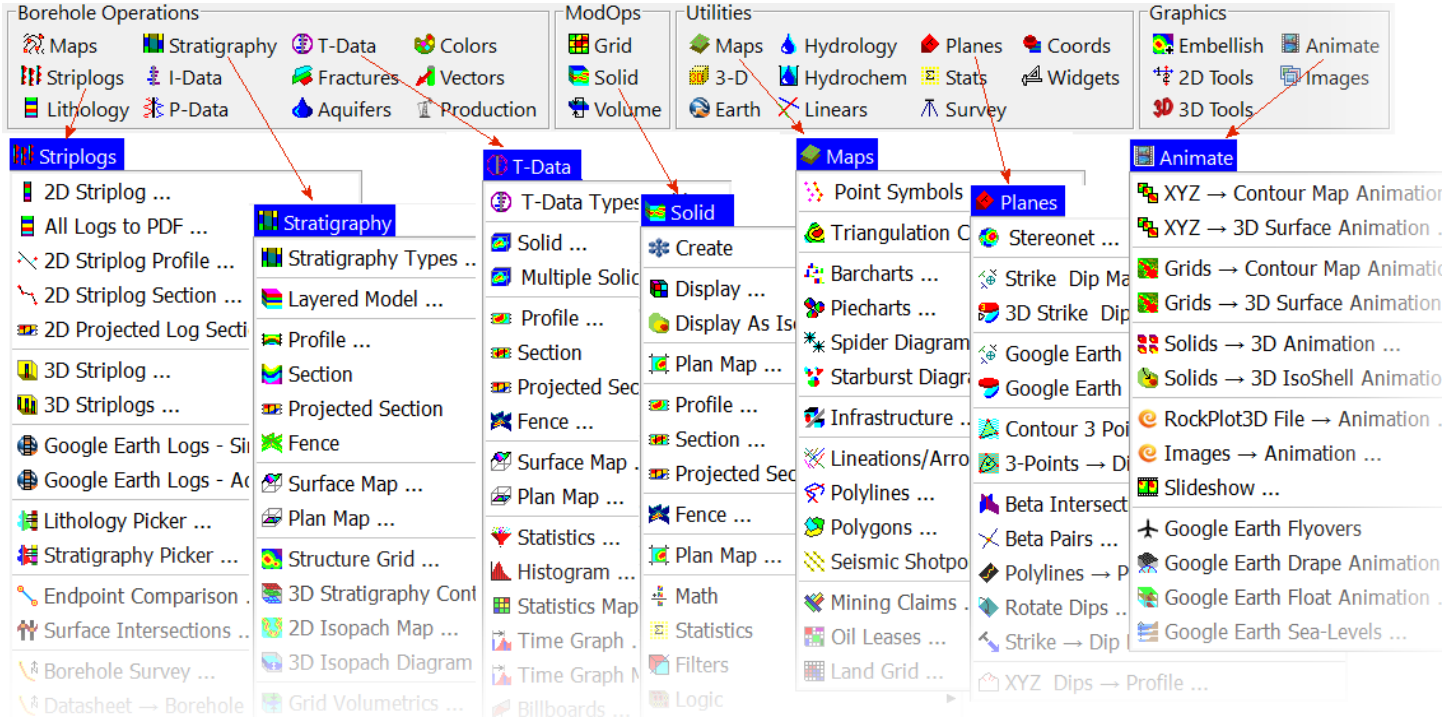


Figure 7. Consolidated Application Menus

Application Abstracts

Application descriptions (Figure 8) are now displayed as the cursor is moved over items within the pull-down menus.

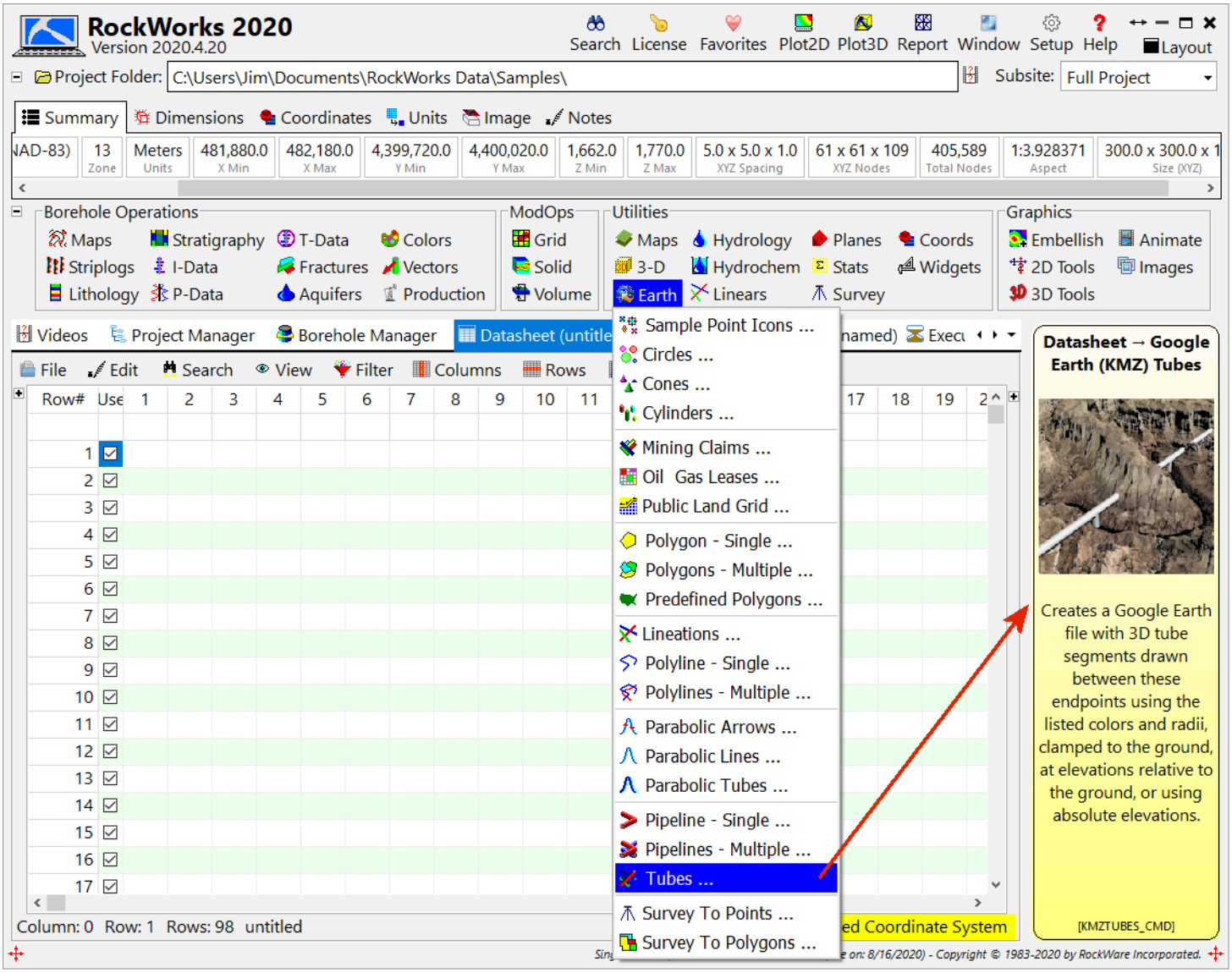


Figure 8. Application Abstracts

Instructional Video: https://youtu.be/T6Fx250kSr8

Dockable Tabs

Items within the main tab bar (Videos, Project Manager, Borehole Manager, etc.) may now be detached from the main RockWorks menu and placed elsewhere on the Windows desktop (Figure 9) or tiled within the main RockWorks screen.

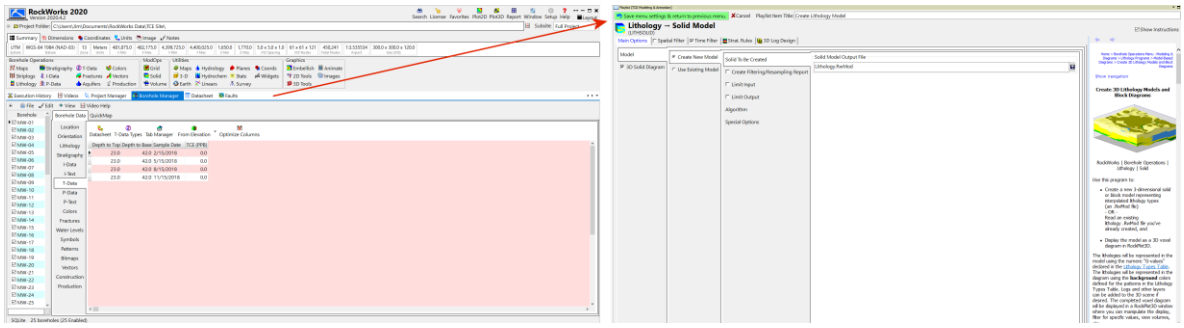


Figure 9. Playlist Detached from Main RockWorks Menu & Moved to Another Monitor

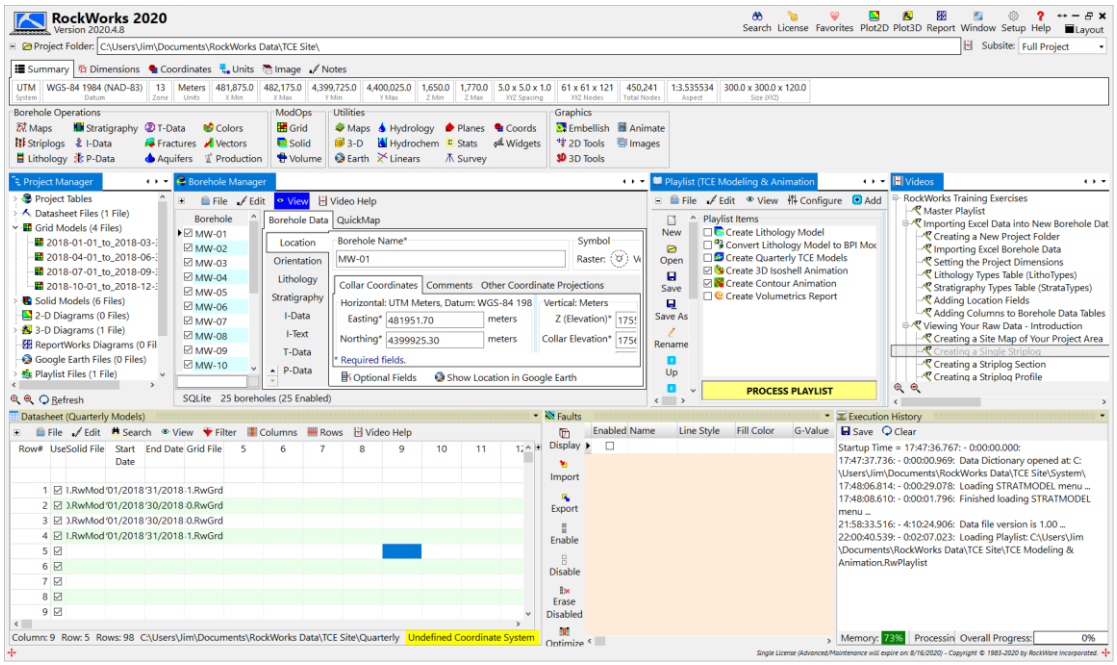


Figure 10. Pages Docked as Panels Within Main RockWorks Menus

Instructional Video: https://youtu.be/8ED6axtMltU

Layout Options

Up to five menu layout configurations (Figure 11) may now be quickly saved and retrieved. This allows for rapid switching between pre-configured single and multiple-screen layouts (Figure 12).

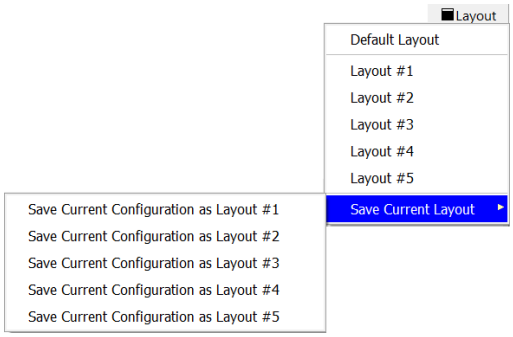


Figure 11. Layout Menu

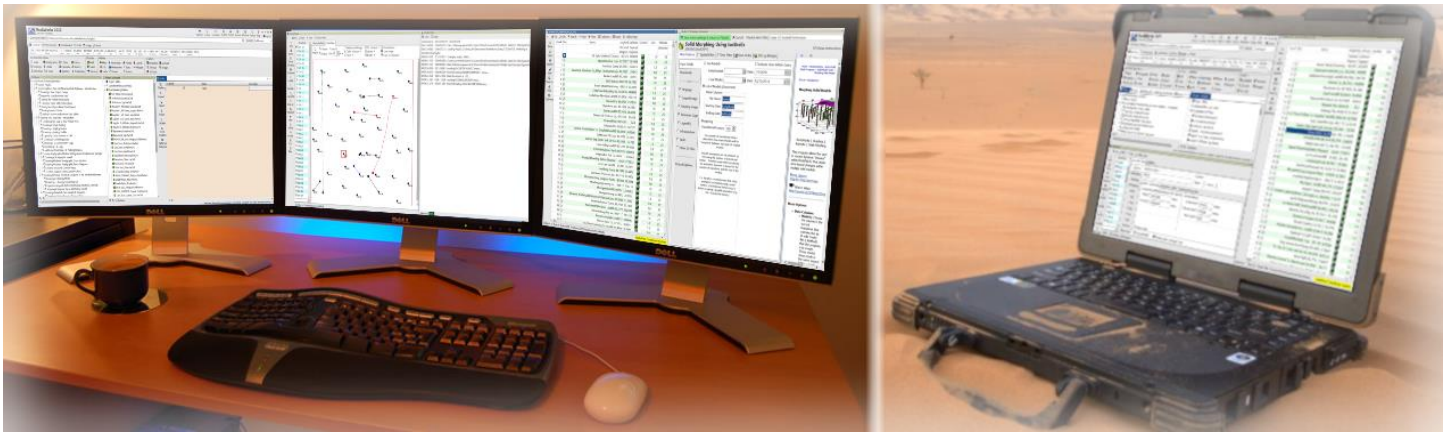


Figure 12. Menus Configured for Three Screens (Left) and Laptop (Right)

Automated Licensing

Single and Annual licenses can now be activated/deactivated automatically (Figure 13) by clicking on the License button at the top of the main dialog.

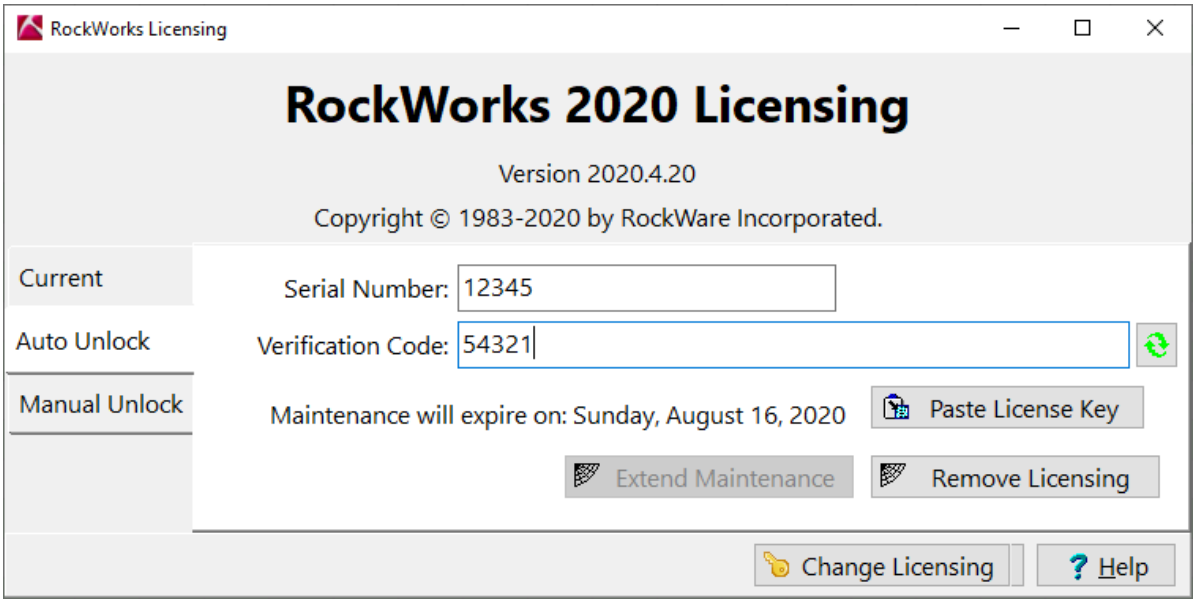


Figure 13. Automated Unlocking

Full-Expand Option

Clicking on the new Full-Expand option will stretch the dialog box to fill multiple monitors. This is extremely useful when viewing cross-sections (Figure 14) or working with large, multi-column datasheets.

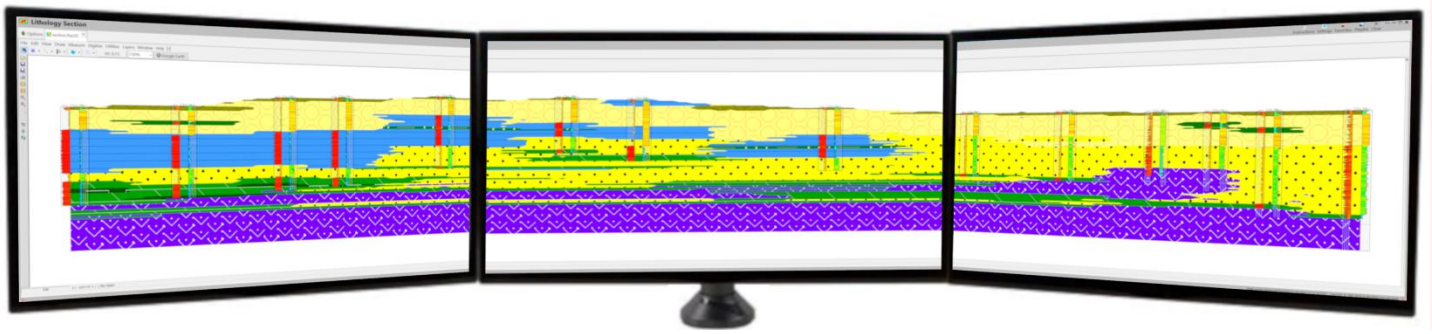


Figure 14. Cross-Section Stretched Across Three Monitors by Clicking the Full-Expand Button

Instructions Checkbox

The new Instructions checkbox (Figure 15) can be used to hide the embedded instructions panel thereby providing more space to display the menu options. This is very useful on lower-resolution screens where screen "real estate" is limited.

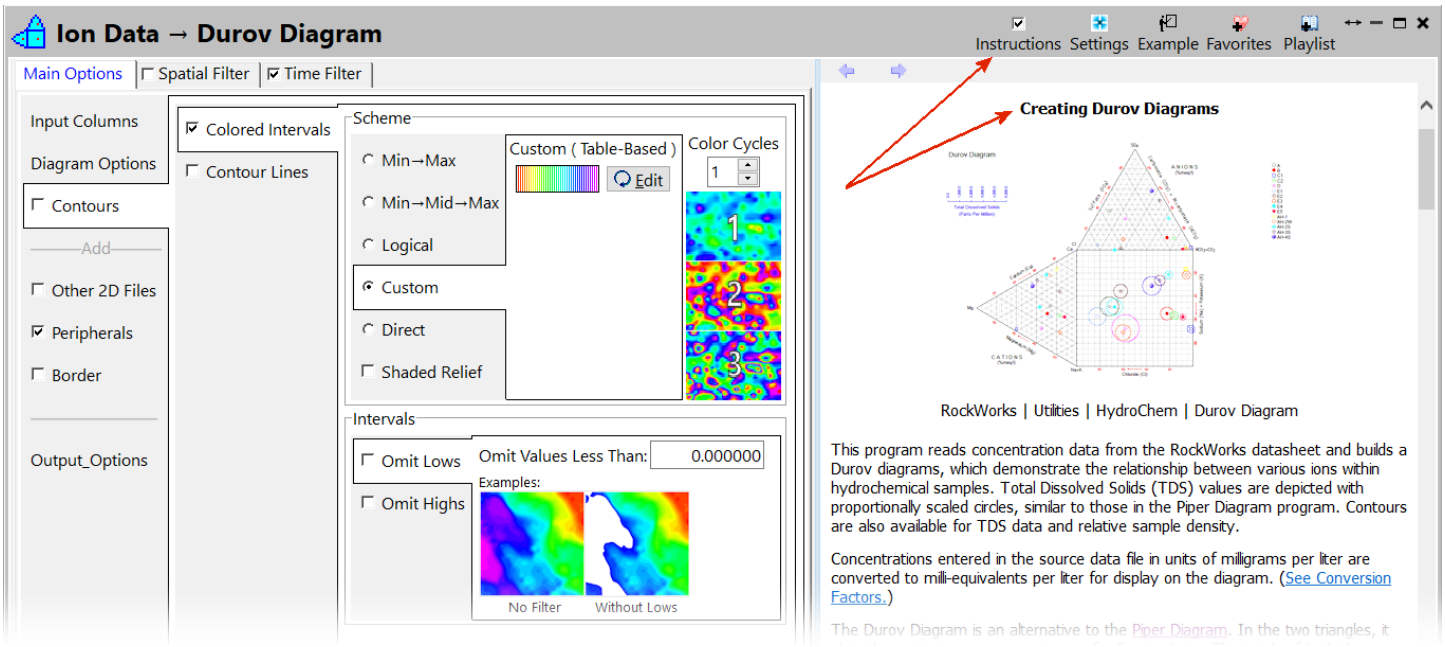


Figure 15. Instructions Checkbox

Functionality

Playlist Automation

An all-too-common scenario involves finishing a project only to discover bad or missing data. To address this problem, RockWorks now includes a feature whereby all of the individual steps can be added to a Playlist (Figure 16). These Playlists can be saved and re-executed with a single mouse-click if the data changes.

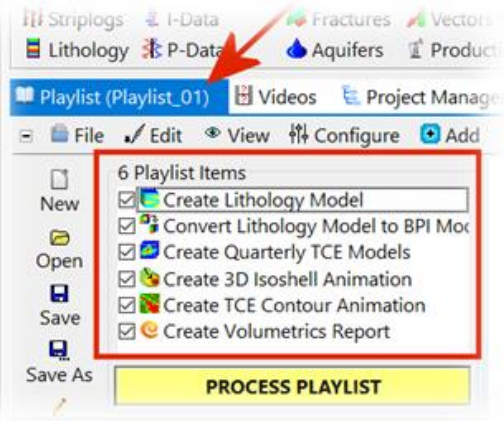


Figure 16. Playlist Menu

The parameters for each item within the Playlist may be examined and/or modified by double-clicking on the item title (Figure 17). The entire Playlist does not need not to be processed to test a particular item. The checkboxes adjacent to each Playlist item determine which steps will be executed when the Process Playlist button is clicked. This provides a means for testing selected items within the Playlist.

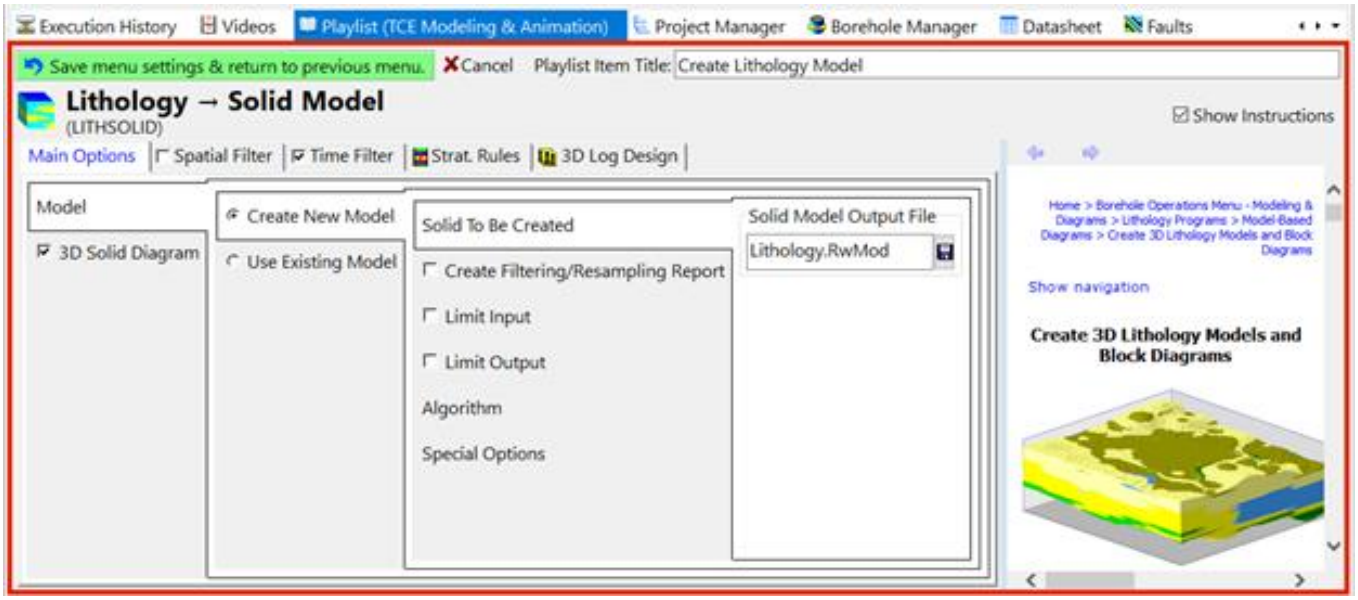


Figure 17. Example of Single Playlist Item Being Examined and/or Edited

Playlists may be exported to RockWorks Command Language (RCL) files for users who wish to control RockWorks via textual scripts (Figure 18).

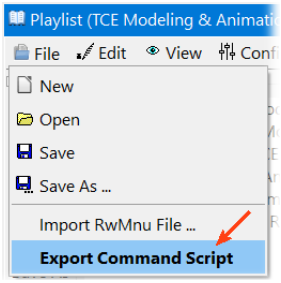


Figure 18. RCL Export Option

SQL statements may be added to the Playlist for even greater capabilities.

The Playlist provides:

- An audit trail to serve as a record of what was done and all of the associated menu settings.
- Automaton of data processing which new data is being introduced on an ongoing basis (e.g. resampling and monitoring).
- A memory aid for projects that are infrequently re-visited.
- A template for processing different data sets/sites using a streamlined workflow.
- Turn-key tools for colleagues or clients who need to use RockWorks capabilities without any downtime spent learning how to use it.

Note: The Playlist is limited to 5 items within the Basic version, 8 items within the Standard version, and unlimited items within the Advanced version.

Instructional Video: https://youtu.be/bFoTpTfJriY

Output Embellishments

In an effort to eliminate additional steps in combining and appending diagrams, common embellishments have been added to the programs that create sections, profiles, projected sections, maps, 3D diagrams and charts.

Sections, Profiles & Projected Sections

Additional features (Figure 19) that can be added to sections, profiles, and projected sections include perimeter annotation, surface profiles, faults, infrastructure, up to five 2D graphics overlays, peripheral annotation (titles, title blocks, color legends, and image), and a border.

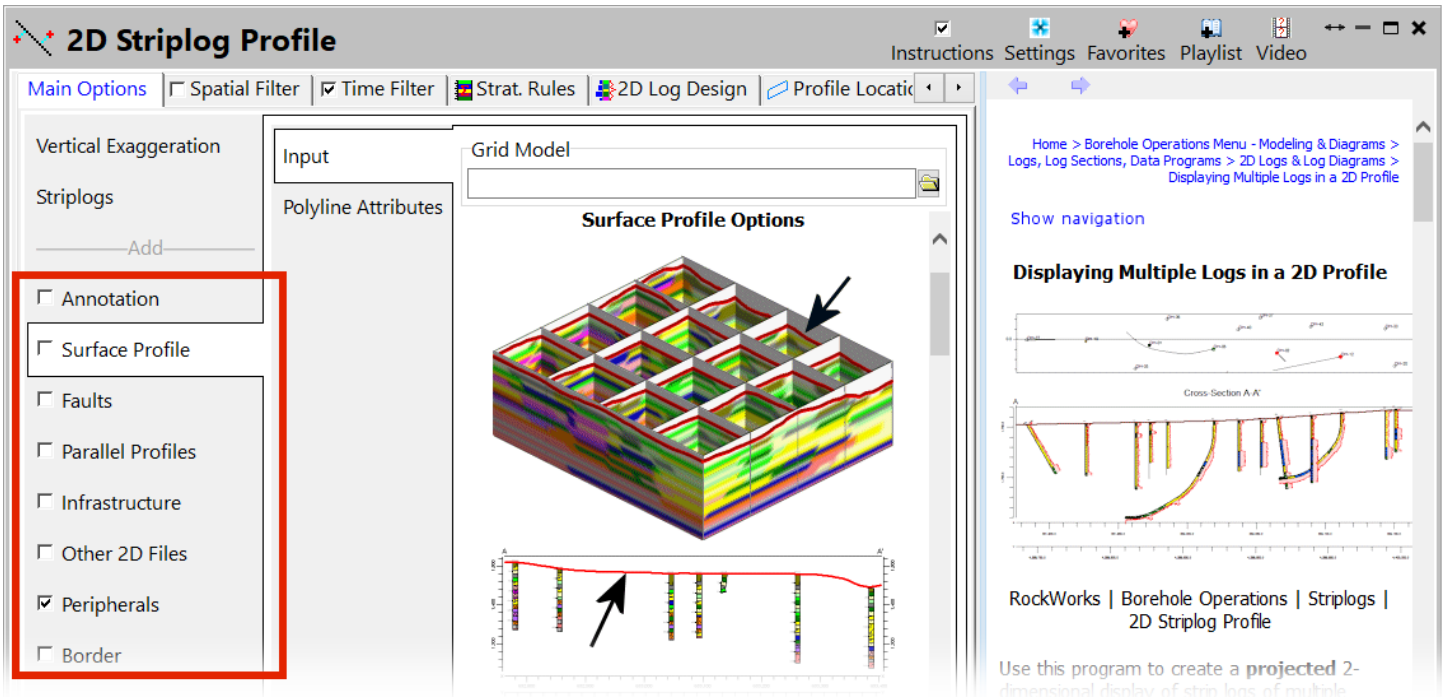


Figure 19. Section, Profile, & Projected Section Embellishments

Map Embellishments

Additional features (Figure 20) that can be added to maps include a background image, labeled axes, map overlays (Figure 20), up to five additional 2D diagrams, peripheral annotation (titles, title blocks, color legends, and image), and a border.

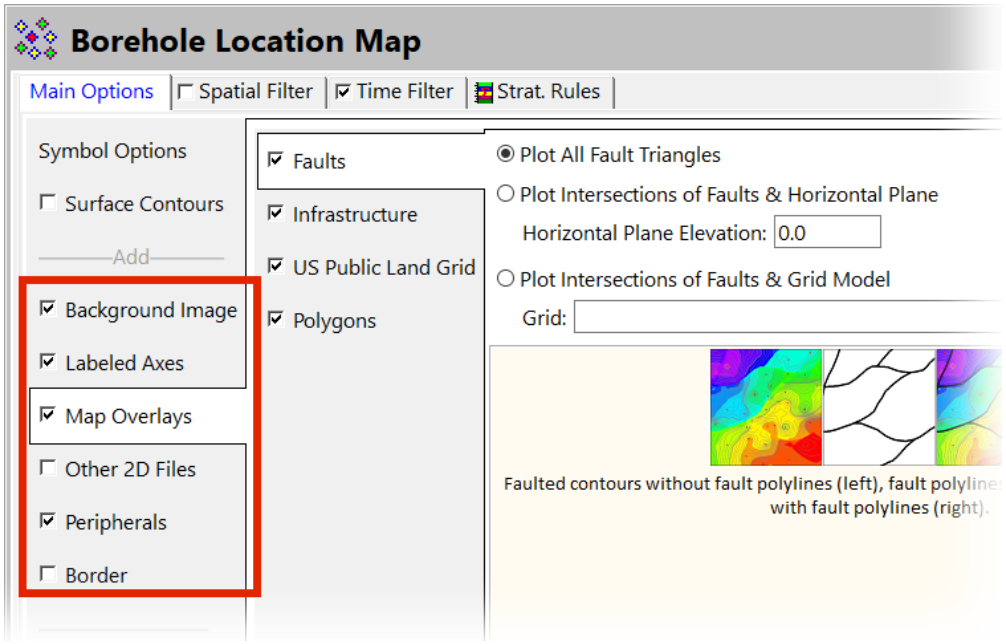


Figure 20. Map Embellishments

3D Diagram Embellishments

Additional features (Figure 21) that can be added to 3D diagrams include striplogs, draped images, floating images, control point spheres, a perimeter cage, legends, 3D infrastructure, 3D faults, and up to five additional 3D diagrams.

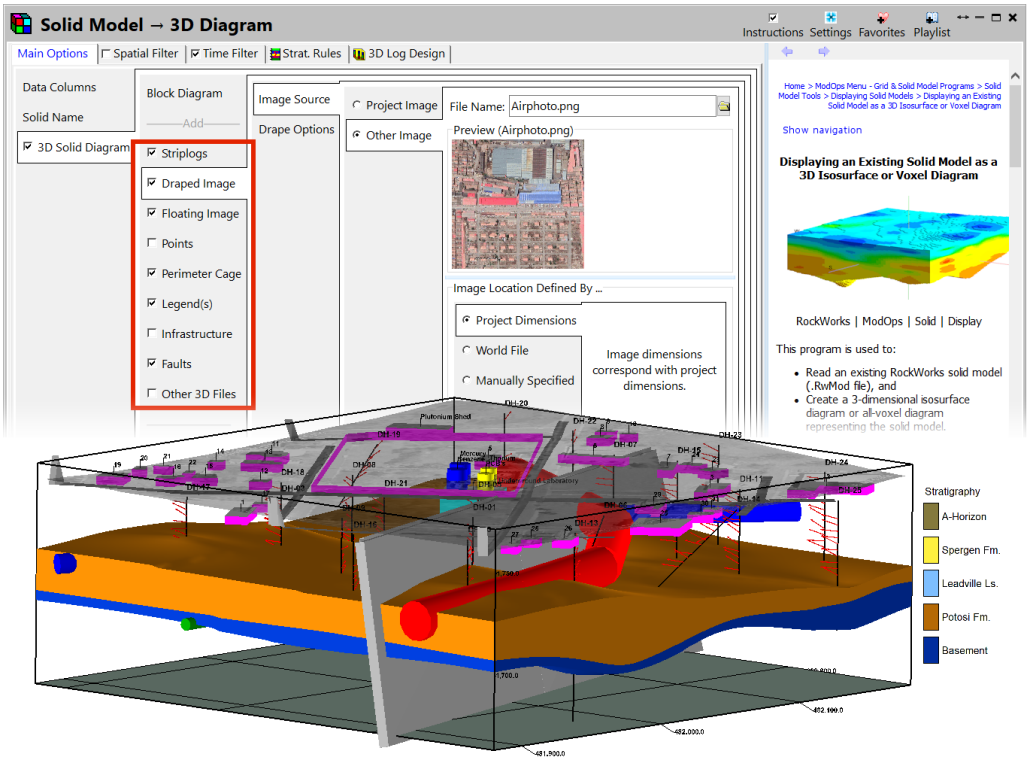


Figure 21. 3D Embellishments

Output Options

2D, 3D, and Reporting programs now include output and export options that remove post-processing steps and facilitate uninterrupted Playlist scripting.

2D Output Options

It is now possible to specify the name of the output file (Figure 22) before it is generated as opposed to waiting until it is plotted. The user also has the option of not displaying (see below).so that Playlists need not display intermediate models and diagrams. In addition, all programs that generate 2D diagrams now include options for simultaneously exporting the output to PDF (as raster images) and/or PNG. This eliminates the extra steps of manually exporting the diagrams within RockPlot2D. In an effort to simplify these exports, the output resolution is configured to create bitmaps in which the horizontal dimension is at least 2,400 pixels. These new capabilities are especially useful when automating workflows via Playlist scripting.

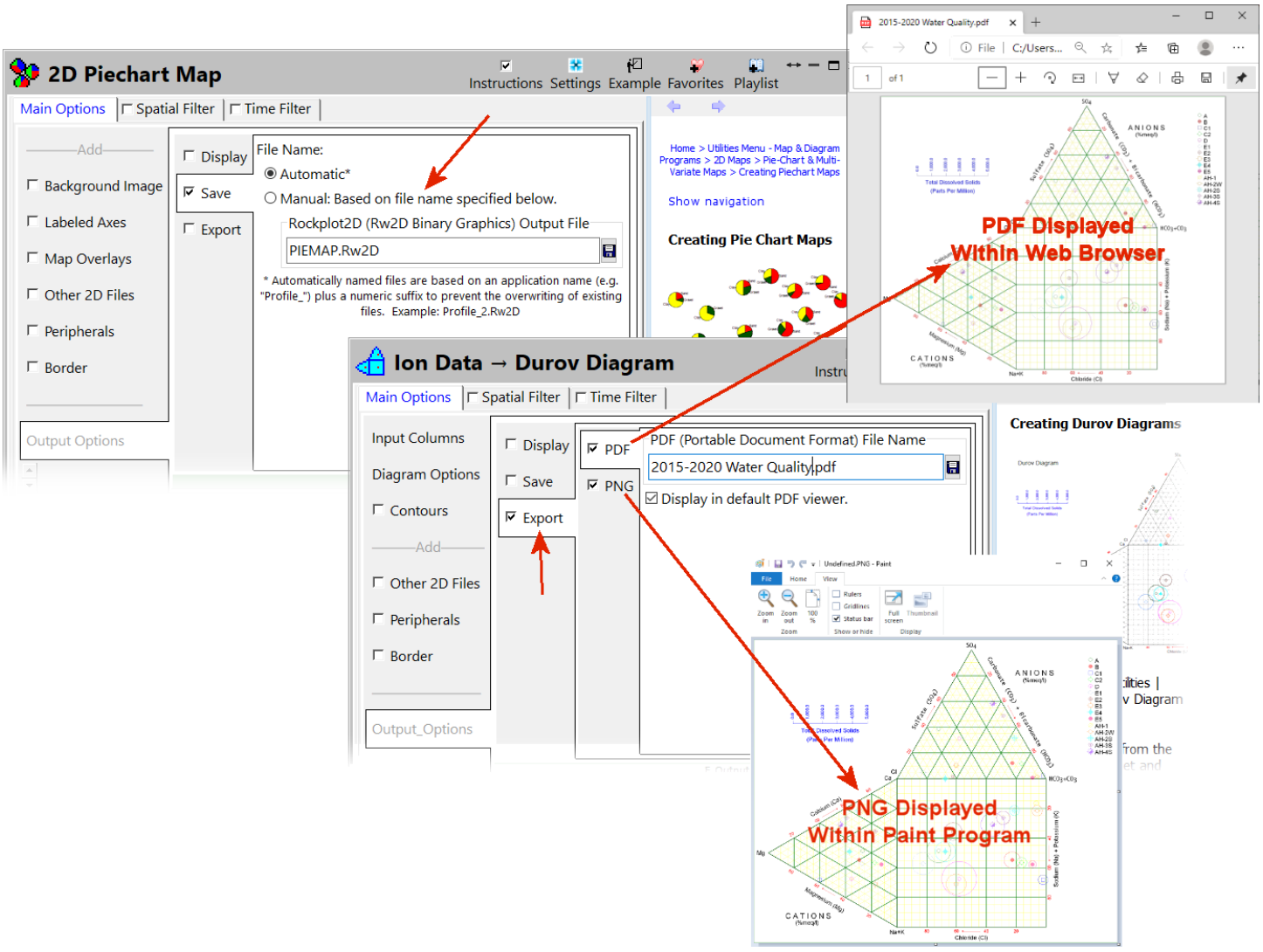


Figure 22. 2D Output & Export Options

Instructional Video: https://youtu.be/xhcxZXu-tn0

3D Output Options

The new 3D output tab (Figure 23) includes options similar to the 2D output, with additional options for exporting the diagram to a PNG image using a variety of user-specified viewing parameters.

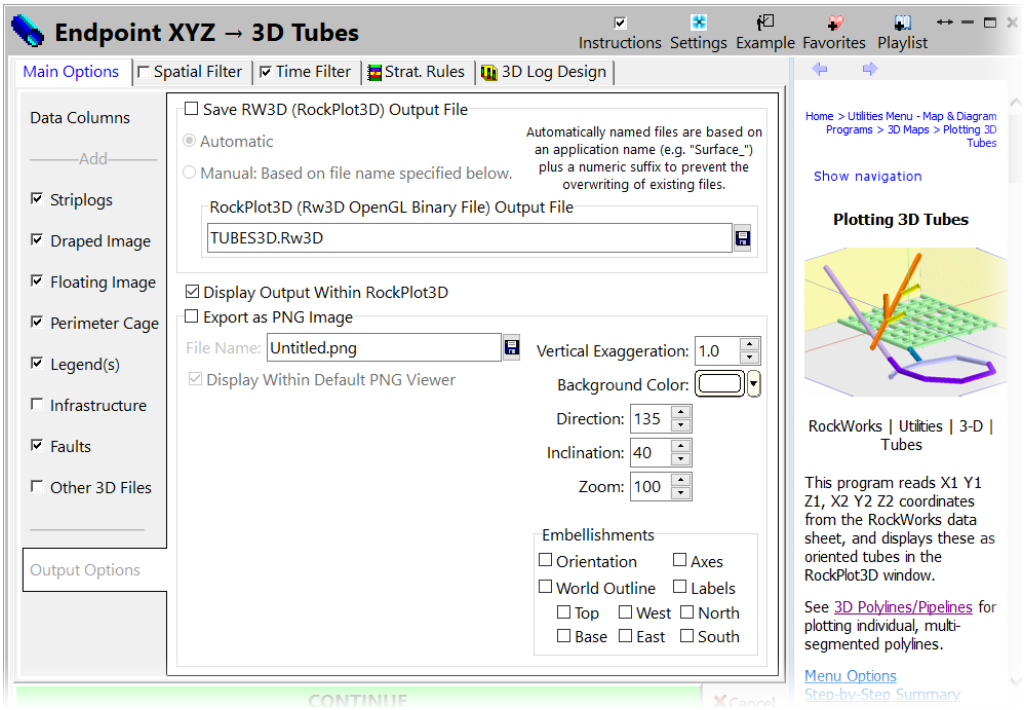


Figure 23. 3D Output Options

Instructional Video: https://youtu.be/q7mvBR4etzM

Google Earth Output Options

The new Google Earth output tab (Figure 24) includes options similar to the new 2D and 3D output tabs with additional options for specifying the initial viewer location and viewing direction.

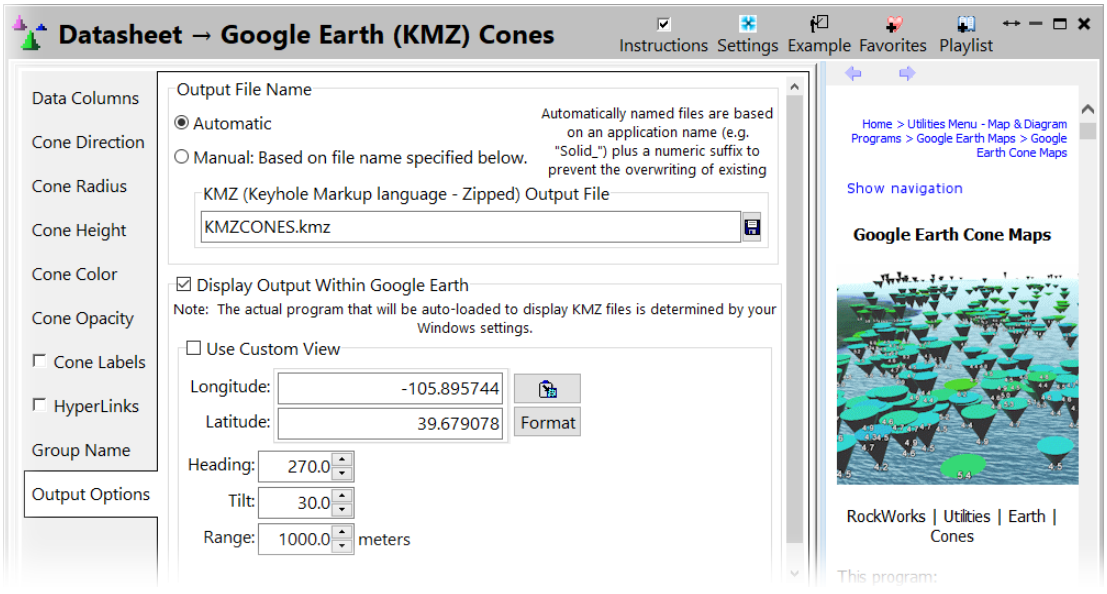


Figure 24. Google Earth Output Options

Report Output Options

Programs that create reports now provide options for direct output to CSV (Excel), Txt (Notepad), or RTF (Word).

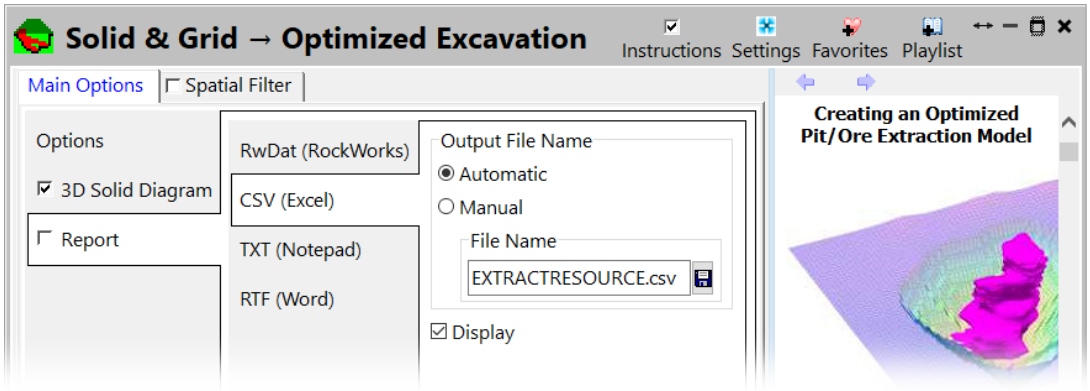


Figure 25. Report Output Options

Expanded Graphic Annotations

Peripheral annotations (Figure 26) have been added to all 2D diagrams including profiles, sections, projected sections, maps, and charts. These accoutrements include a 2-line title, a title box matrix, a symbol key, North arrows, scalebars, and images.

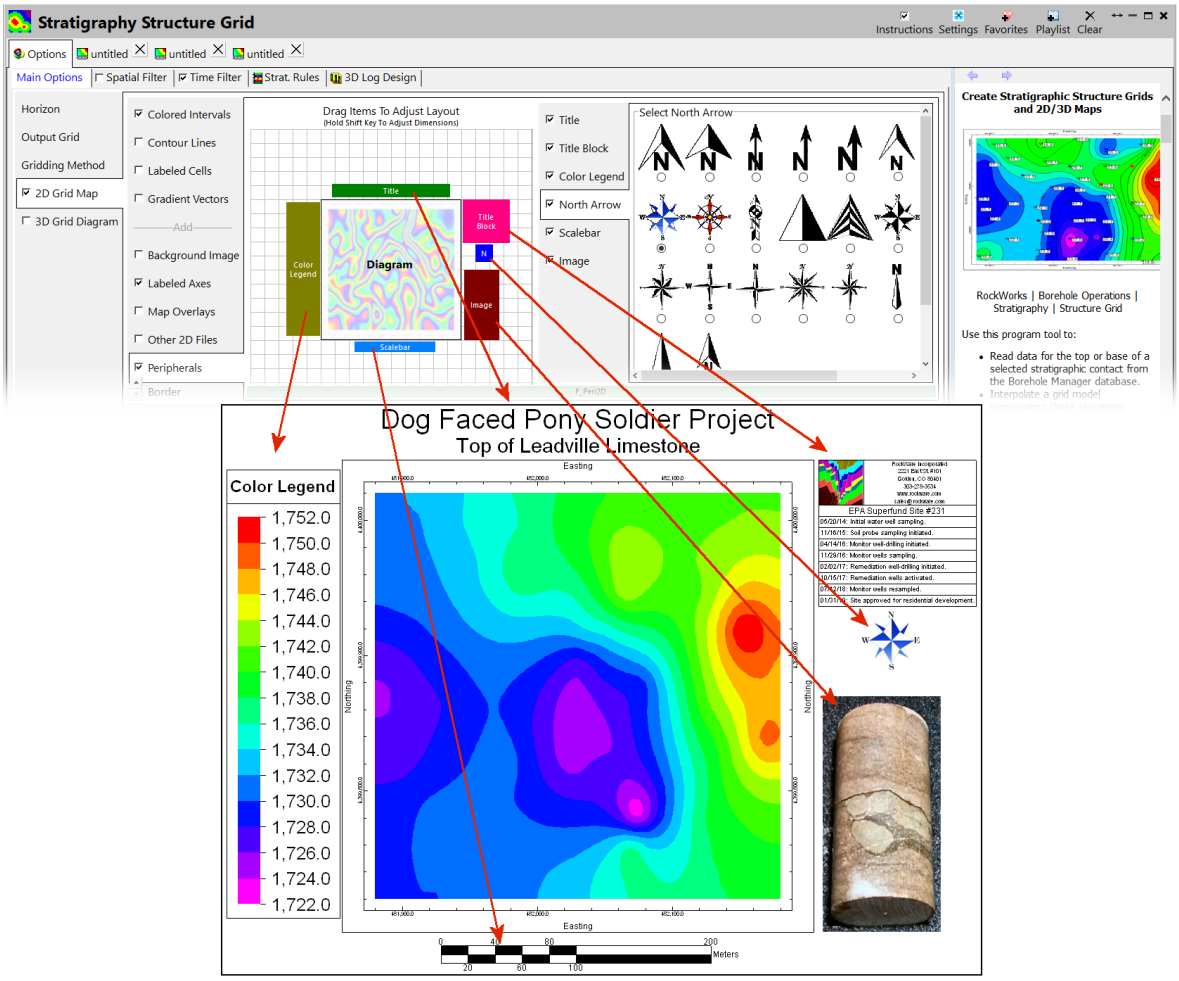


Figure 26. Peripheral Annotation Options

Examples Button

Programs that read data from the Datasheet now include an Example button (Figure 27), which will display a pulldown menu listing one or more sample files that can be used to demonstrate the application. Clicking on an example file will automatically load it into the Datasheet. Note: Using the Example option only makes sense when using the Samples project or as a layout reference.

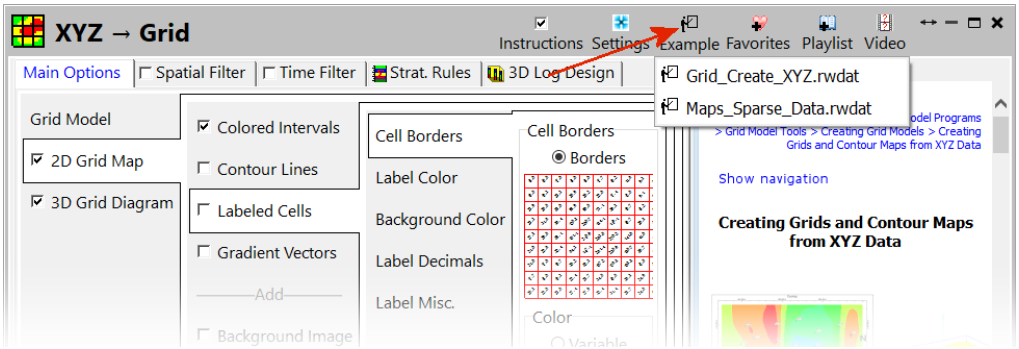


Figure 27. Example Pulldown Menu

Instructional Video: https://youtu.be/8-H7EKHx8YE

Database Comparison Tool

A new database comparison tool (Figure 28) provides a quick and easy report of the differences between borehole data in different projects. This capability is especially useful when the same database has "diverged" (e.g. multiple users working on the same database without a shared version on a network server).

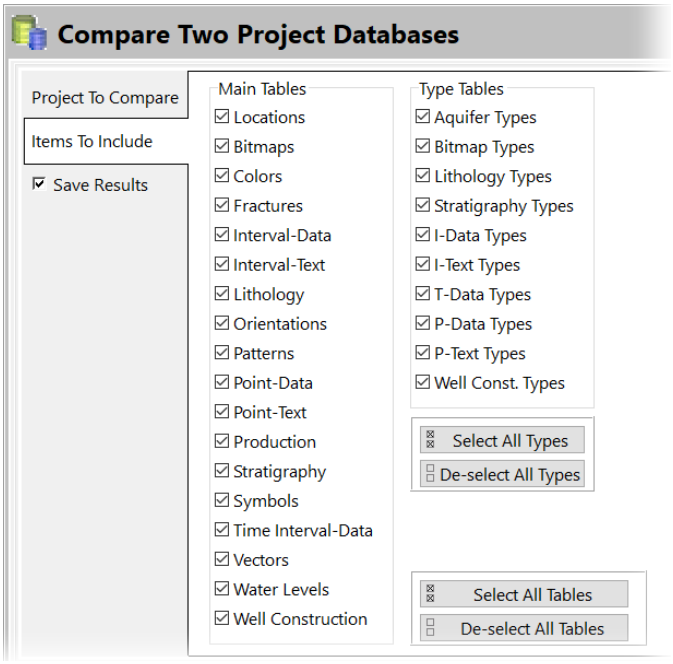


Figure 28. Database Comparison Menu

Coordinate Conversions

RockWorks now supports over 5,800 coordinate systems (Figure 29).

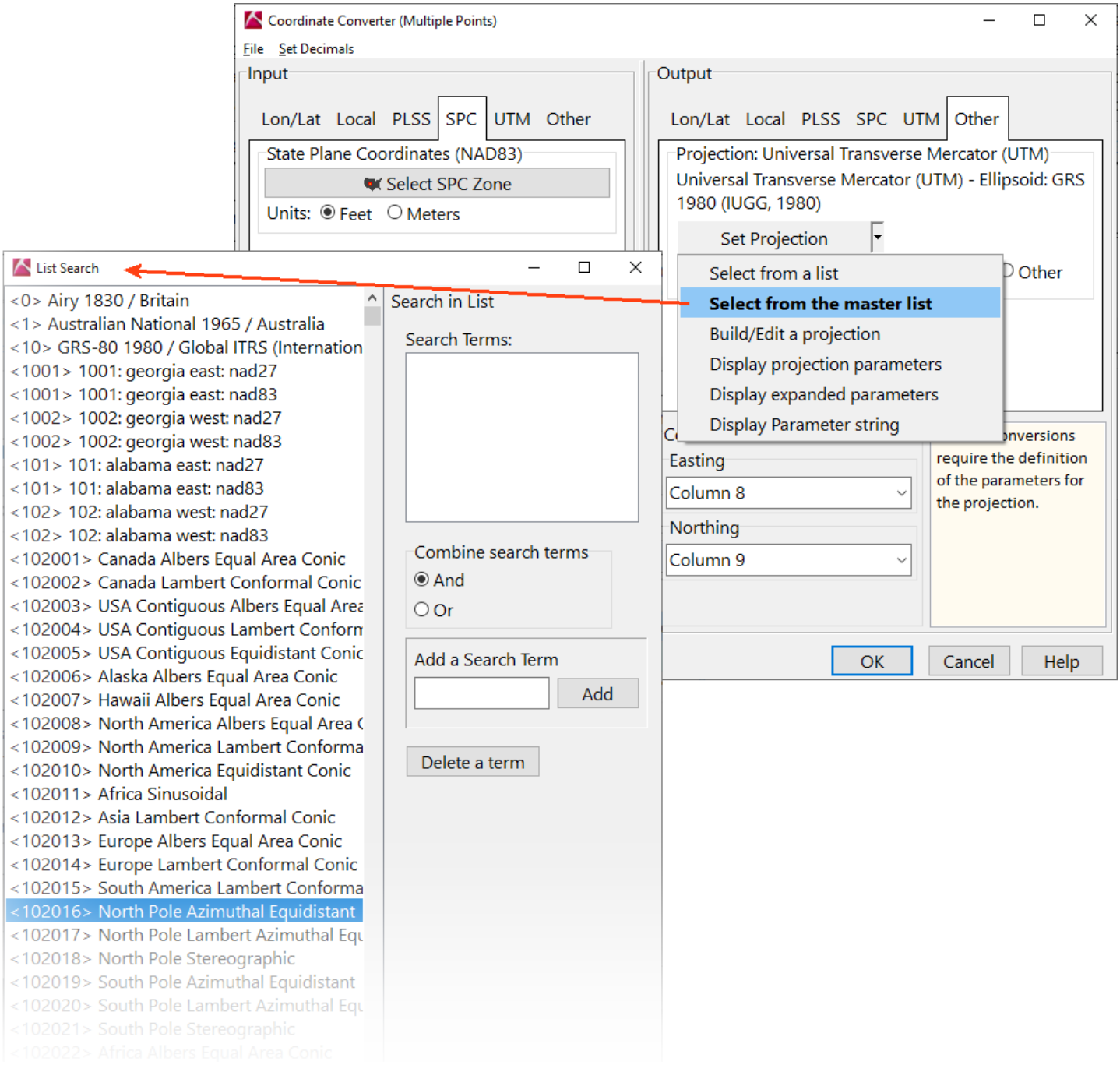


Figure 29. Coordinate Conversions

3D Fault Handling

All faults are now treated as three-dimensional arrays of triangles. Management of these faults is accomplished via a database table (Figure 30) that is accessed from a new tab within the main menu. These faults can be plotted as 2D maps or 3D surfaces. All modeling (gridding and solid-modeling) and subsequent diagrams based on these models can be constrained by the 3D faults. Available for Basic (3 faults), Standard (5 faults), and Advanced (unlimited faults).

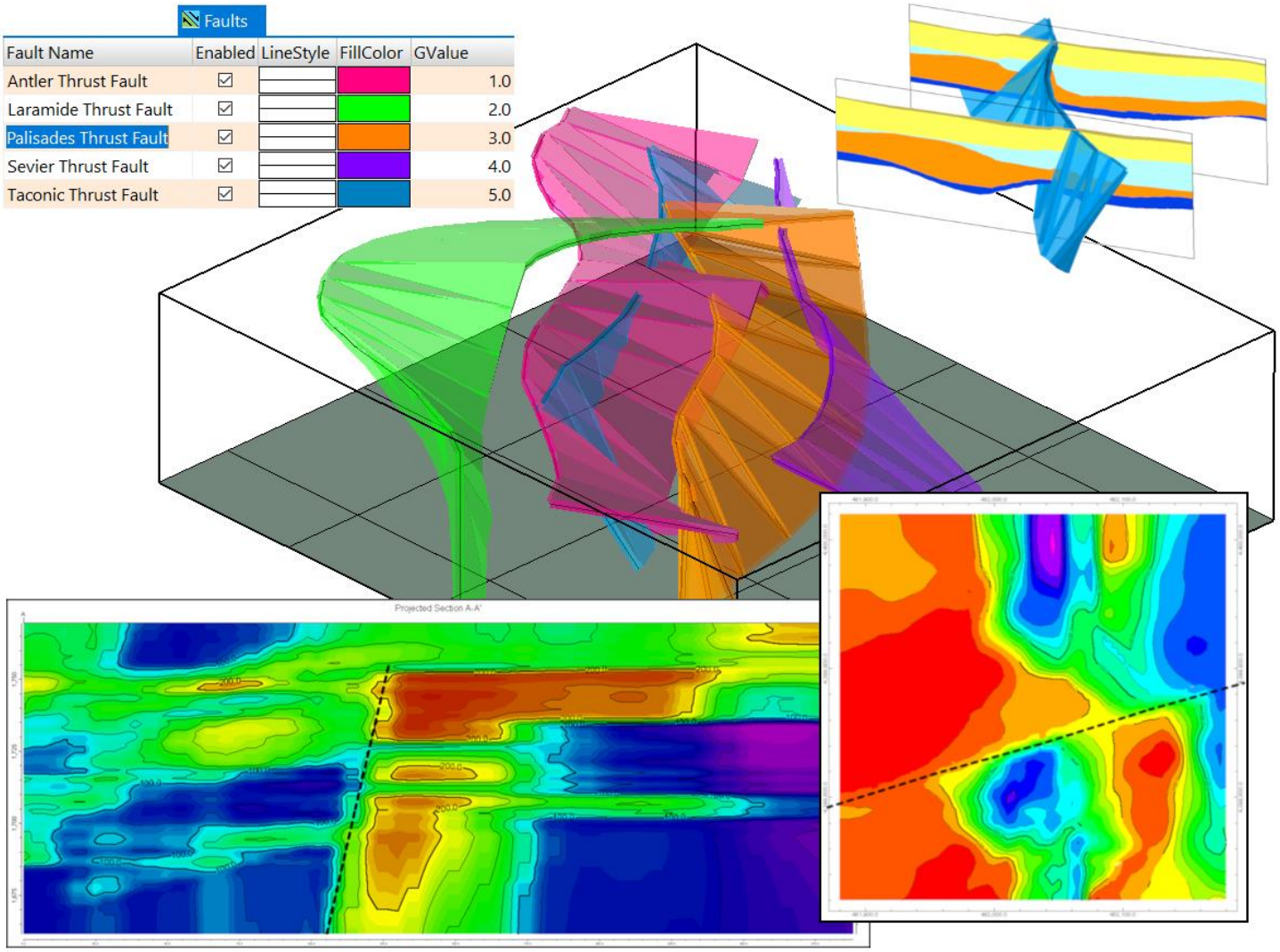


Figure 30. Fault Table & Output Examples

Then new T-Data (time-based downhole data) Multiple Solids program (Figure 31) automatically creates “snapshot” models by filtering the T-Data at designated time intervals and creating models that can be filtered such that the geochemistry is constrained by a Boolean permeable/impermeable model. These models can then be used to create morphed animations (see Animation Utilities).

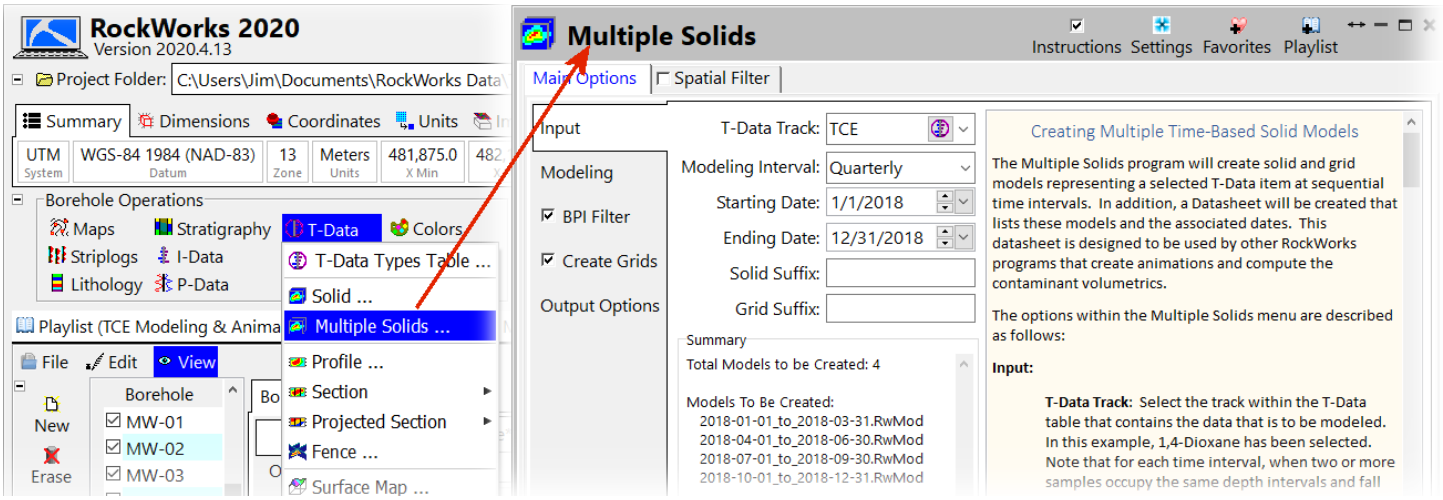


Figure 31. T-Data Multiple Solids Menu

Animation Utilities

A suite of new animation tools (Figure 32) has been added for creating videos in which grids and solids are transitionally "morphed" to show geochemical migrations over time. The output can be saved to AVI, Animated GIF, MP4, WMV, individual frames, or exported as a Google Earth animation.

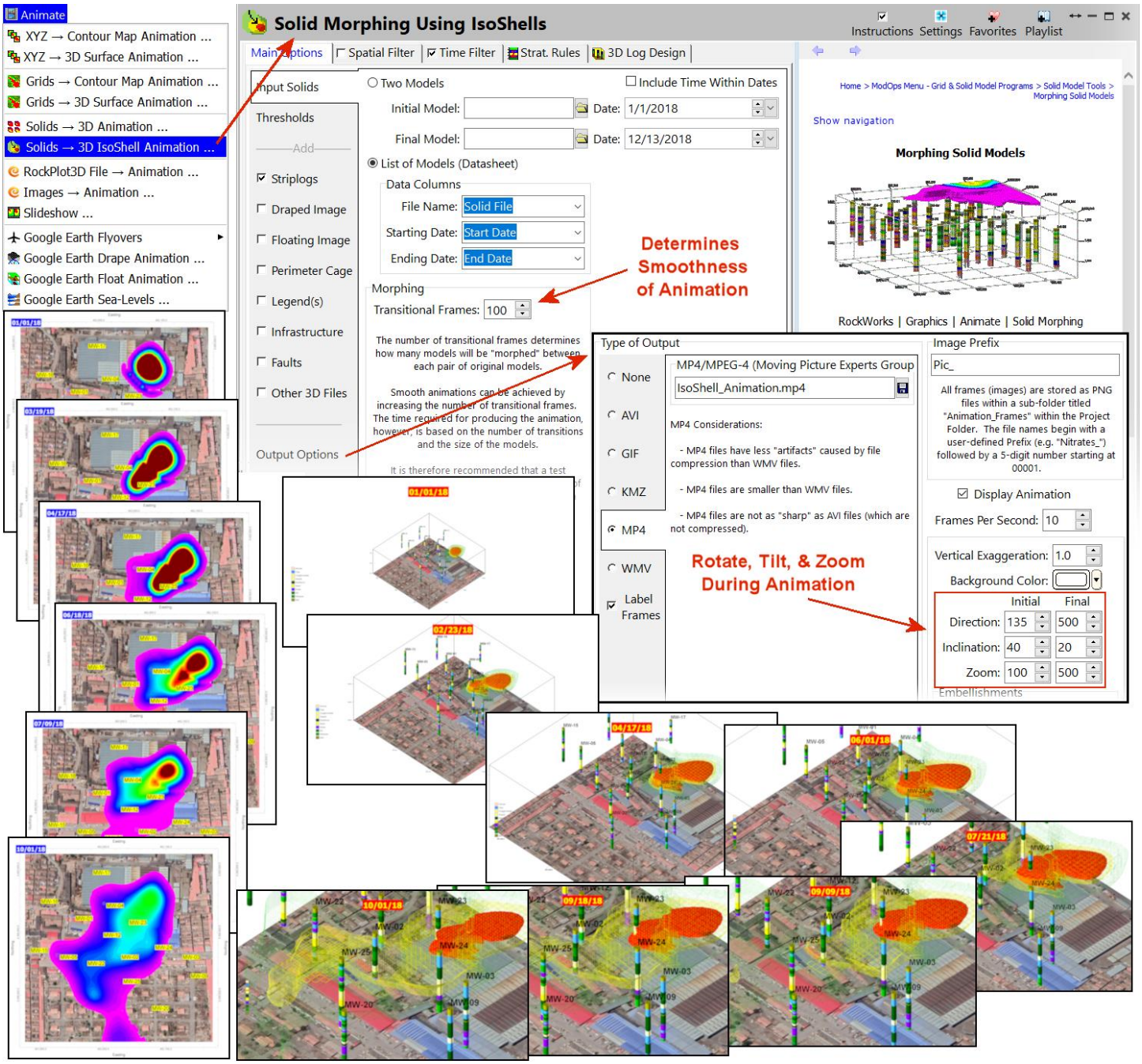


Figure 32 .IsoShell Morphing Animation Utility

Instructional Video: https://youtu.be/BvNsB0w1SxA

Automatic Polygon Clipping

All solid modeling programs now include an option for clipping the model based on an automatically-defined convex polygon defined by the control points, analogous to stretching a rubber band around the boreholes.

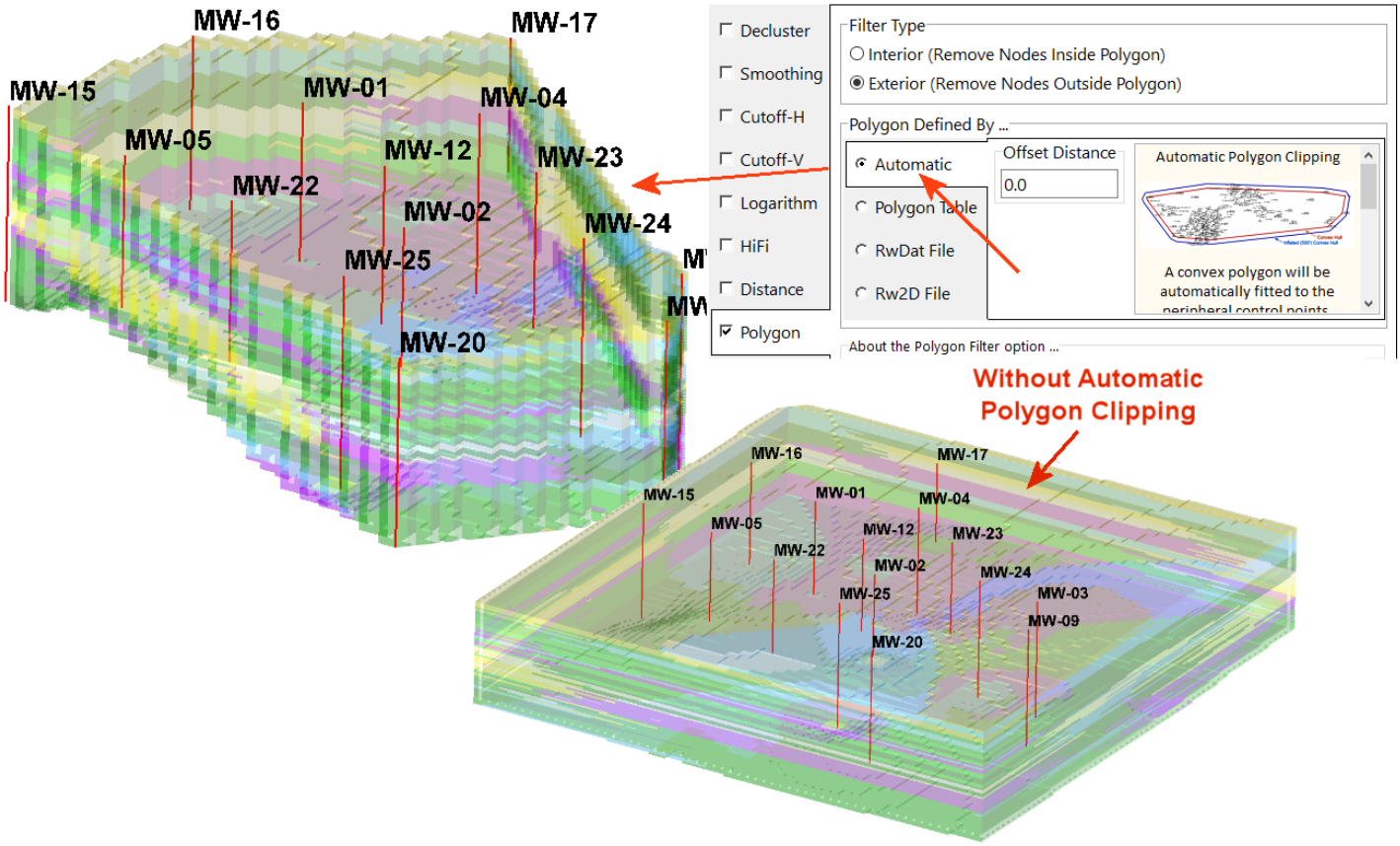


Figure 33. Automatic Polygon Model Clipping

Spatial Filtering

All programs that involve coordinates now include a spatial filtering option (Figure 34) so that subsets (including zones between surfaces) can be selectively analyzed/modeled.

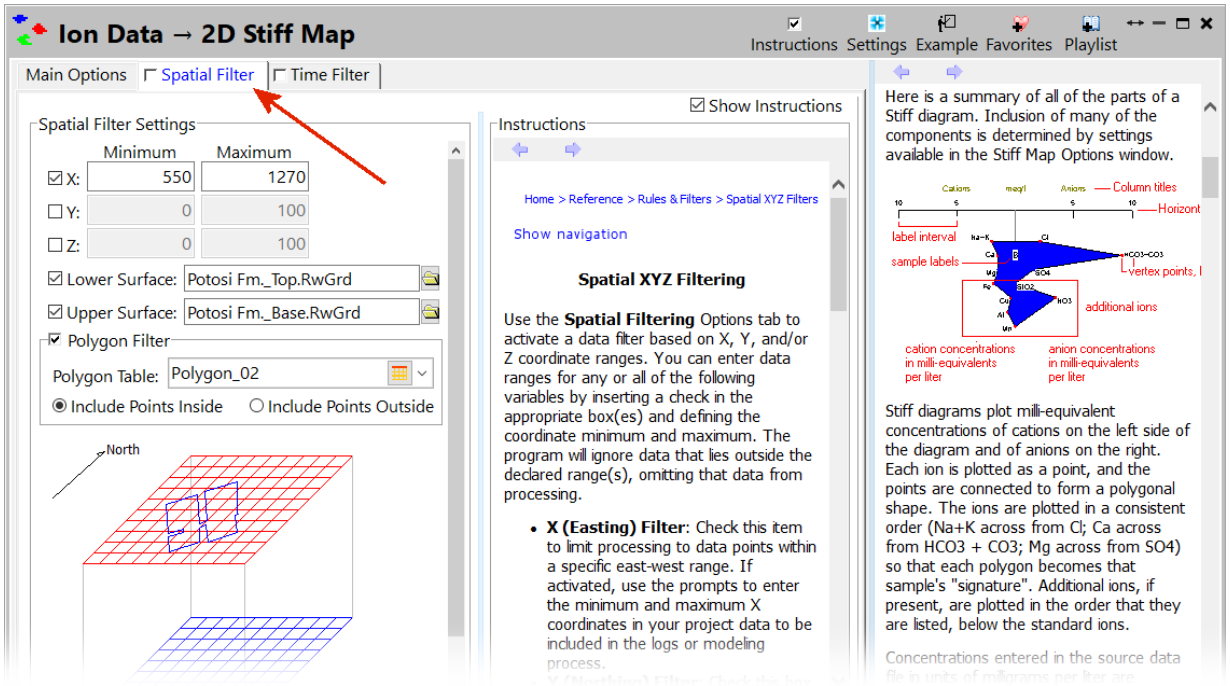


Figure 34. Spatial Filtering Menu

Time Filtering

Time-base filtering options (Figure 35) have been added to the Hydrochemical utilities (i.e. Durov Diagrams, Piper Diagrams, Stiff Diagrams, and Stiff Maps) as well as any programs that might include striplogs (in order to filter the T-Data).

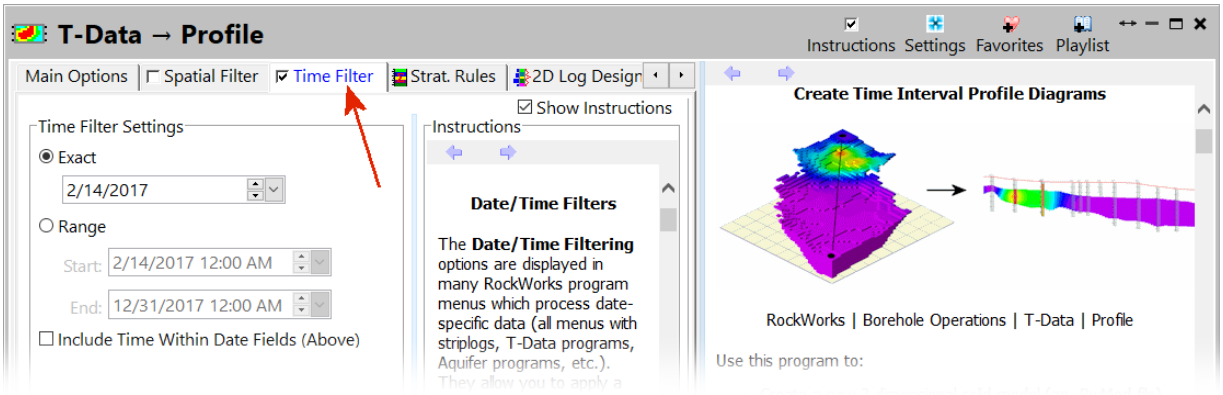


Figure 35. Time Filtering Menu

Striplogs -> PDF Bulk Exporter

All of the boreholes within a database can now be exported in one step to a multi-page PDF (as raster images) file that can serve as a report appendix (Figure 36).

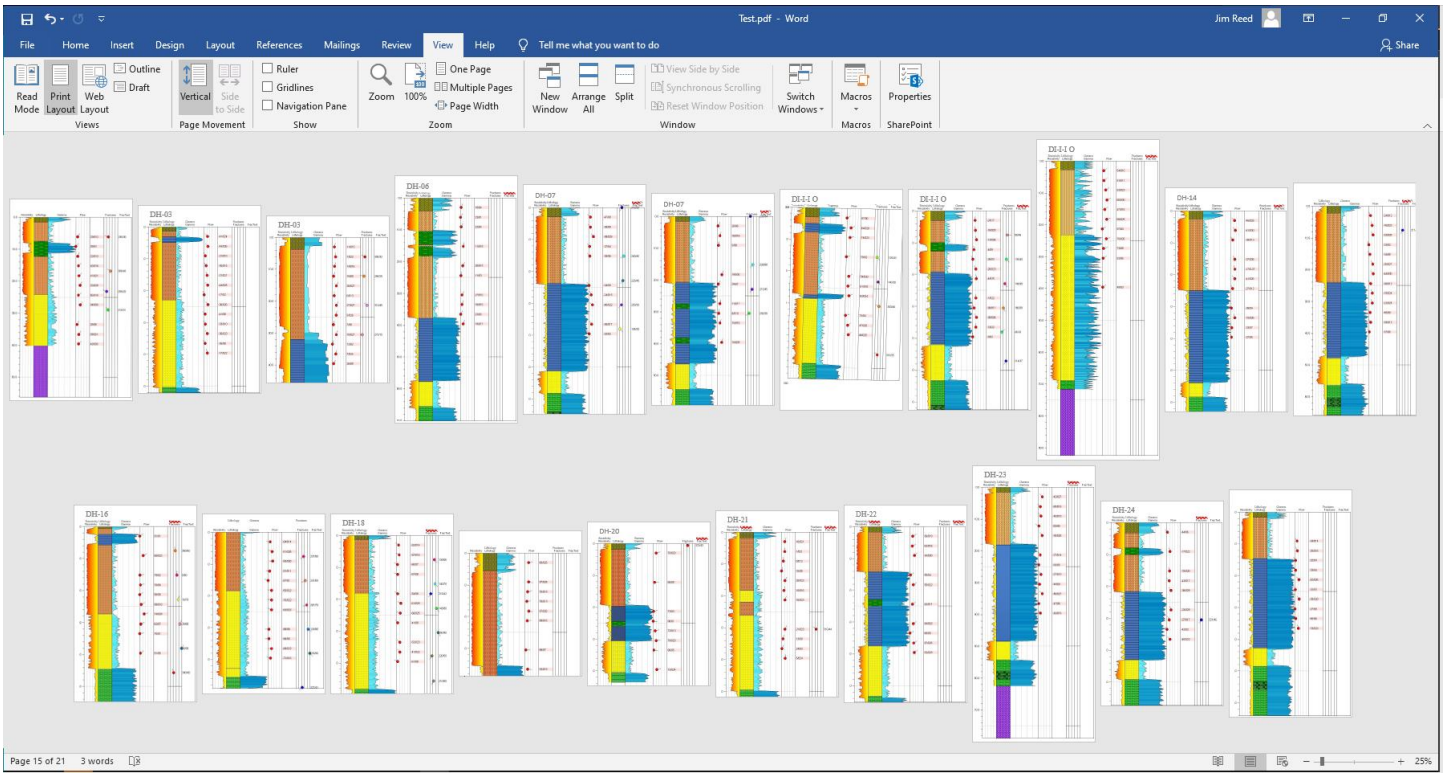


Figure 36. PDF Output Viewed Within Microsoft Word

Transparent 2D Color Contours

The Opacity of Colored Intervals within 2D output may now be adjusted such that features below the contour map (e.g. airphotos) may be identified (Figure 37).

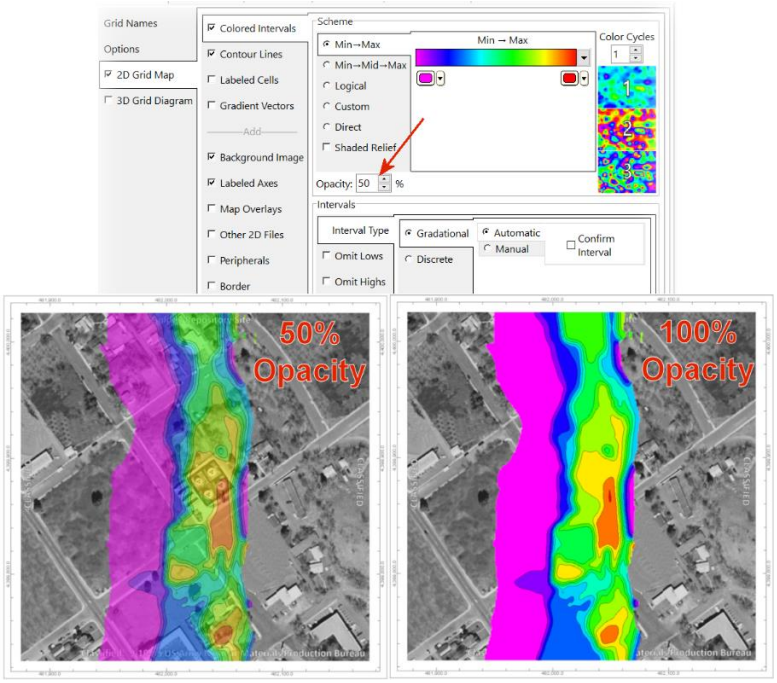


Figure 37. Adjustable 2D Color Contour Transparency

Constraining Model

An option titled "Constrain" has been added to the Solid Options sub-menu (Figure 38). This new tool will use the specified Boolean model (the "constraining model") to determine which nodes will be interpolated during the subsequent modeling process. Specifically, nodes will not be interpolated for voxels in which the corresponding node within the constraining Boolean model has a value of zero (false).

Constraining models are useful for limiting geochemical models to regions defined by other parameters such as permeability.

Constraining models can also significantly decrease the time required to generate a model if the majority of the model would otherwise be subsequently filtered (e.g. multiplying the output by a Boolean model).

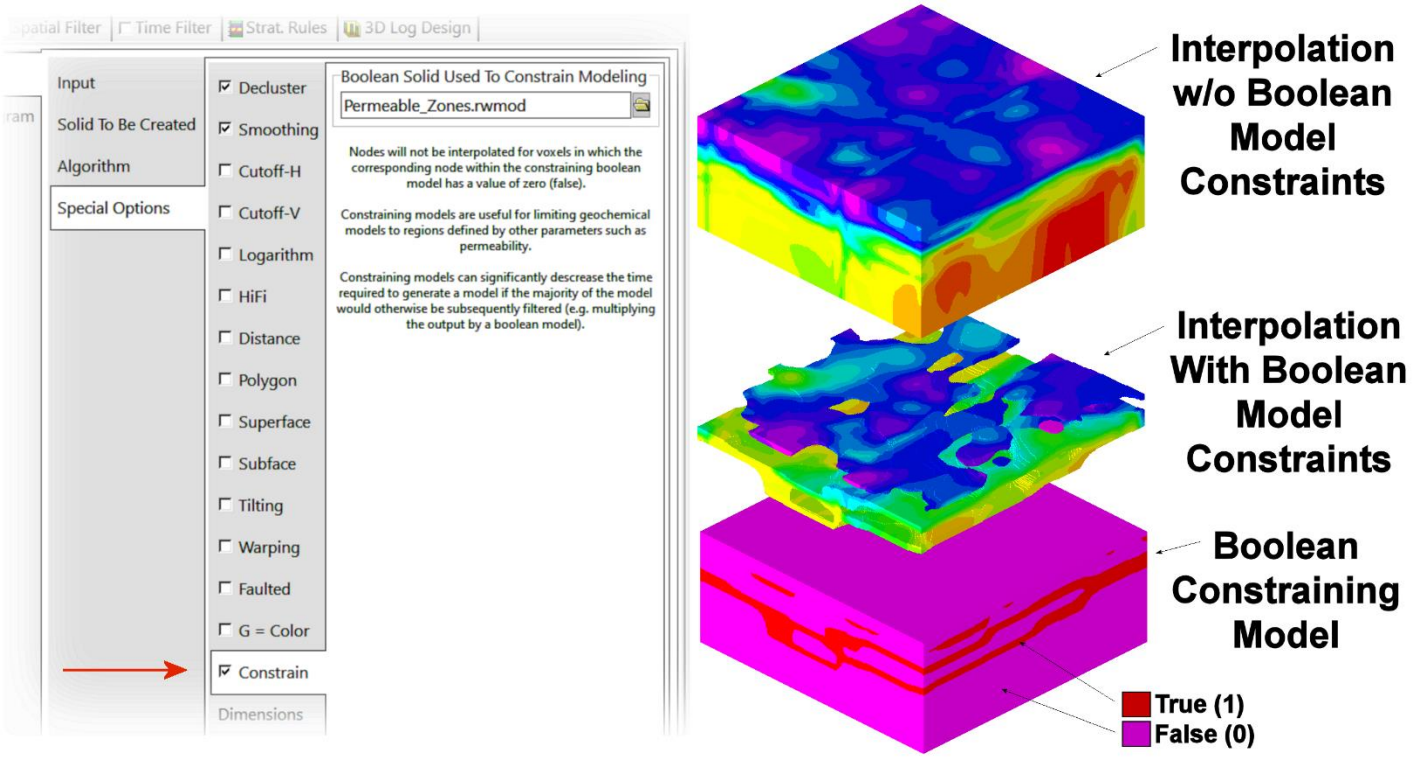


Figure 38. New Solid Modeling Constrain Option

Instructional Video: https://youtu.be/ENBvoV3NFD8