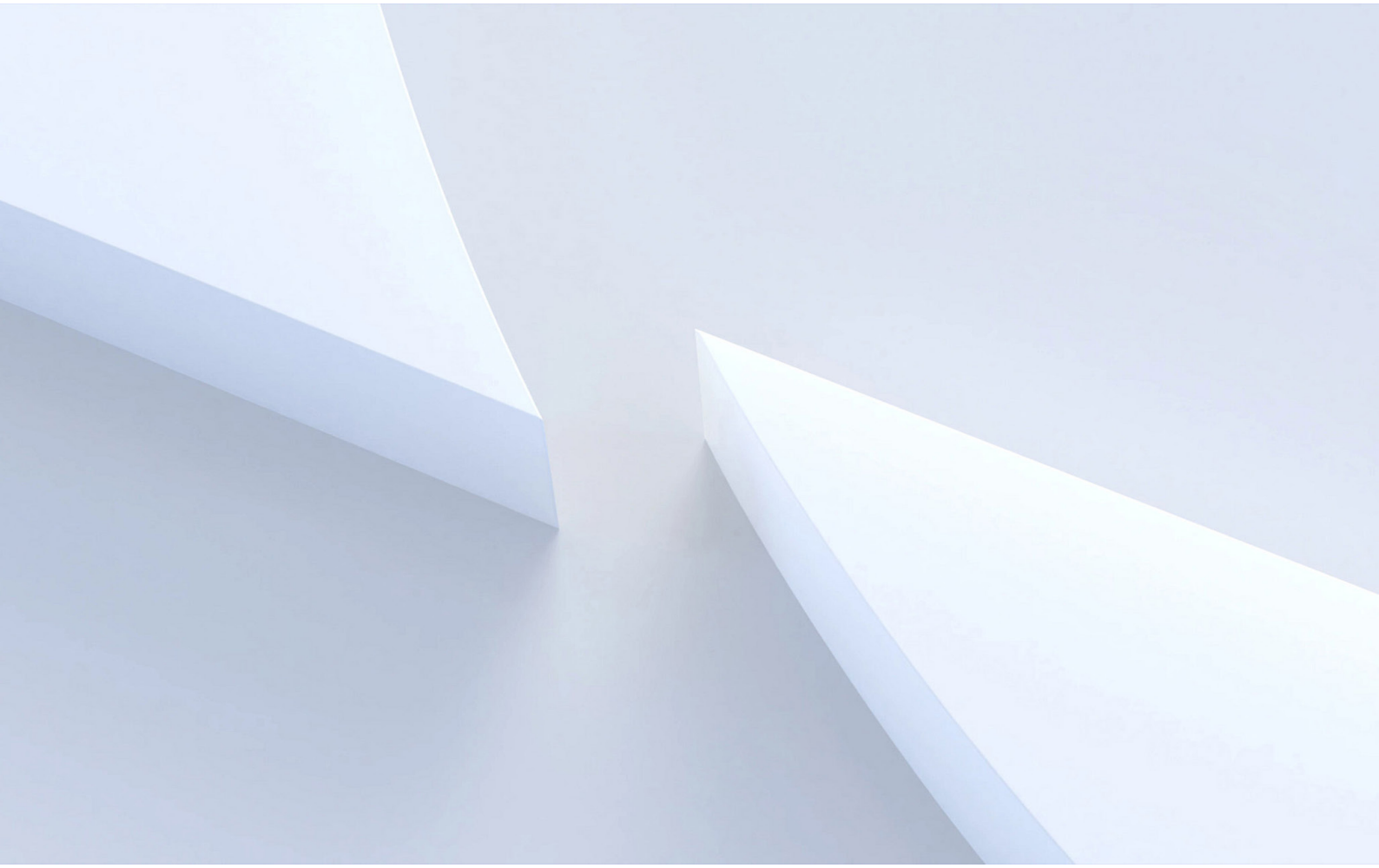


Petromod 2024.3

Release Notes

Copyright

Security Notice

The software described herein is configured to operate with at least the minimum specifications set out by SLB. You are advised that such minimum specifications are merely recommendations and not intended to be limiting to configurations that may be used to operate the software. Similarly, you are advised that the software should be operated in a secure environment whether such software is operated across a network, on a single system and/or on a plurality of systems. It is up to you to configure and maintain your networks and/or system(s) in a secure manner. If you have further questions as to recommendations regarding recommended specifications or security, please feel free to contact your local SLB representative.

Contents

Introduction

Petromod basin modeling software combines seismic, well, and geological information to model the evolution of a sedimentary basin. Petromod software has several applications. Classically, applied for hydrocarbon exploration, Petromod predicts if and how a reservoir has been charged with hydrocarbons. This includes the source and timing of hydrocarbon generation, migration routes, quantities, and hydrocarbon type in subsurface or at surface conditions.

Petromod is equally suitable for other basin modeling usages such as carbon storage site screening, natural hydrogen modeling, and geothermal modeling among others. Petromod can be used in all geological environments, regardless of their complexity. This includes compressional and extensional tectonic environments and salt provinces.

Petromod software has a standardized user interface across the entire 1D, 2D, and 3D software suite and employs the same simulators in 1D, 2D, and 3D to ensure that all technical features and tools are available and identical in all dimensions. Multiple simulation methods, for example, Darcy, flow path (ray tracing), invasion percolation (IP), and the Petromod hybrid and combined methods (Darcy/flow path/IP) are used with the same data models. It is possible to couple water solubility including dissolution and advection with all migration methods.

Petromod fluid migration modeling technology is the most advanced commercially available tool and the only commercial system with fully PVT controlled modeling of n-component/3-phase relationships during the entire migration process. The 2D and 3D migration modeling technology delivers an improved understanding and prediction of fluid properties for several basin model applications by offering flash calculations throughout the entire model and its geologic history.

For further analysis and post-processing Petromod input and output data are easily integrated with the Petrel E&P platform. Petromod takes advantage of high-performance computing by allowing to submit simulations for parallel processing in the cloud.

Petromod 2024.3 is compatible with Petrel 2024.3 and later versions.

MPI runtime environment

An MPI runtime environment must be installed on your computer. Otherwise, you cannot use the Petromod 2024 simulator.

The MPI runtime environment is required for both single and parallel processing on Windows and Linux systems:

- **Windows**: Microsoft MPI v10.1.2 (or above)
- **Linux**: Intel MPI 2018.2.199 (or 2021.12 or above)

For more information, see the *Petromod Installation Guide*.

Licensing

Petromod 2024 requires **Schlumberger license server version 2021.1**. If you have been working on Petromod versions prior to 2021.1, you must upgrade your Schlumberger license server before you install Petromod 2024.3.

For information on upgrading the license server, see the *Schlumberger Licensing User Guide*.

Maintenance contracts are usually yearly contracts, renewed at any time during the year. Upgrades are based on your maintenance contract expiration date. This is how you read the licensing format in the license file:

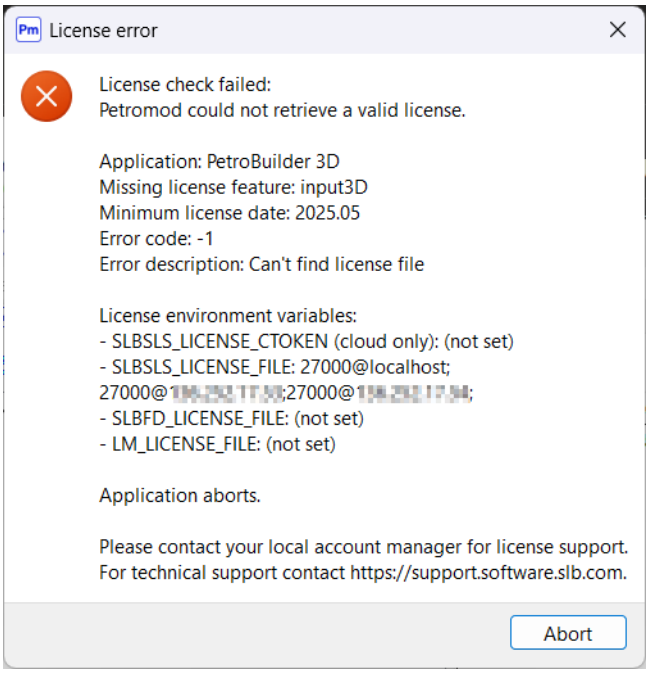
```
FEATURE petrobuilder3D slbsls <yyyy.mm> <dd-mmm-yyyy> <#>
```

Where:

- `<yyyy.mm>` is the maintenance expiration year and month
- `<dd-mmm-yyyy>` is the license expiration day, month, year
- `<#>` is the number of licenses

Maintenance renewal is required to run any Petromod version released after your maintenance expiration date. You will be contacted by SLB before your maintenance expires.

If a license is missing, a license error appears. It indicates the missing license feature and the minimum license date required to open the application. In the below example a license valid from May 2025 is required.



Warning: When you specify the location of your license server in an environment variable such as *SLBSLS_LICENSE_FILE*, you must include the port number (for example: 27002@localhost). Configurations without port number (like @localhost) are not supported.

For more information, see the *Petromod Installation Guide* or the *SLB Licensing User Guide*.

System requirements

Before you install Petromod 2024, your machine must have a processor with a x64 instruction set including AVX extensions.

Hardware requirements

In the table below, you can see the hardware requirements for workstations.

Resource	Recommended requirements
Processor	16 core (fast clock speed)
Memory	64 GB RAM
Primary storage	SSD
Graphic card	Nvidia RTX 3000 Ada

In the table below, you can see the hardware requirements for laptops.

Resource	Recommended requirements
Processor	8 core (fast clock speed)
Memory	32 GB RAM
Primary storage	SSD
Graphic card	Nvidia RTX 3000 Ada

In the table below, you can see the hardware requirements for Linux clusters.

Resource	Recommended requirements
Processor	Dual 16 core (fast clock speed)
Memory	256 GB RAM
Network card	10 GBit NIC
Primary storage	SSD
Infiniband (optional)	Mellanox Connect X

CAUTION: It is possible that graphics do not display correctly when using older graphics cards and drivers. We recommend installing the latest graphics drivers to avoid OpenGL graphic display errors. The driver version that comes with the OS in most cases is quite old, or even generic drivers are used if the graphics hardware is not recognized correctly during the installation of the OS. These drivers only support basic functionalities and do not offer the OpenGL features required by Petromod. Be aware that most onboard graphics hardware does not support OpenGL at all. A dedicated graphics card is required for Petromod. We recommend disabling the onboard graphics unit in the BIOS. This will help you to avoid performance problems and visualization errors.

Warning: Linux users:

Due to known issues concerning the instability of OpenGL graphics, Petromod only supports local rendering on 3D graphic cards with stable graphic drivers. Rendering via a network could cause stability issues.

Warning: Linux users:

Do not change the GUI style of your window manager (by using `qtconfig`, for example) while Petromod is running. Petromod could stop responding if you do.

Software requirements

Resource	Recommended requirements
Microsoft Windows 10 (Version 23H2 or newer) or Microsoft Windows 11 with the below:	64 bit
Microsoft.NET Framework	4.8
Microsoft Visual Studio runtime environment	2022
RedHat Enterprise Linux 8.6 (or newer)	64 bit

Petromod Open Simulator

You must install the Python scripting language to your system to use the Open Simulator published with Petromod 2024.

You must use Python 3 to write your own scripts. A Python 3.9.x installation is required on your computer.

For more information, see the *Petromod Installation Guide*.

Convert Petromod projects to Petromod 2024.x

Petromod 2023 projects (or older) must be converted before you can open them in Petromod 2024.

To convert a project, use the **Convert project to 2024** tool in the Petromod Command Menu. With the tool, you can convert projects from version 2013.1 onwards (for example: 2021.x to 2024). For projects from 2018/19 and later, you can also include the existing output into the conversion.

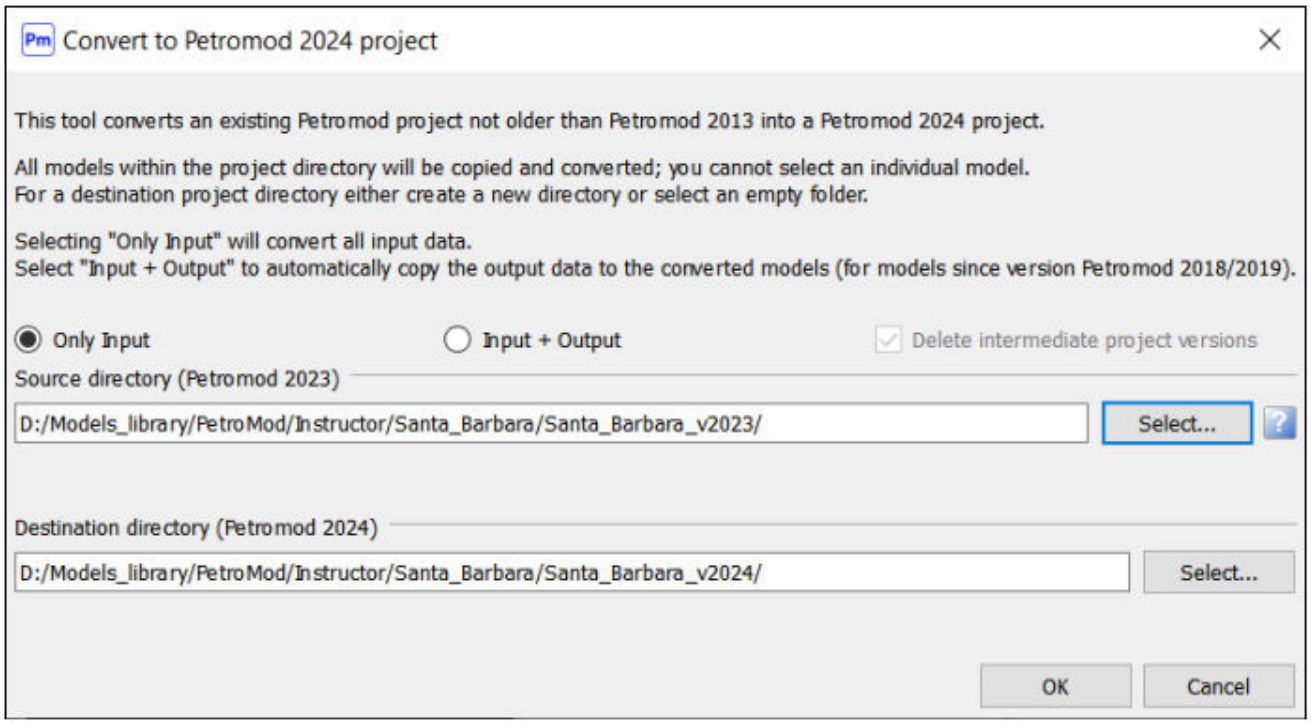
Note: Petromod 2024.1 and 2024.2 projects are compatible with Petromod 2024.3, therefore no conversion is necessary.

When you convert a Petromod project to the current version, you will not lose the earlier version(s). Instead, Petromod creates a converted copy. The converted copy includes the entire project directory, which means it converts all models in the project. There is no option for converting individual models. If you choose to include output in the conversion, ensure that enough disk space is available as 3D output can be large (approximately 0.5-2TB).

The tool converts Petromod models, including all data intrinsic to a model, and then copies the user data in the `project/data/...` folders.

Note: For projects older than 2018.1, only input data is converted to the current version. Output data from simulation runs is not converted or copied to the new Petromod project directory (except, optionally, for projects from 2018.1 onwards).

1. On the menu bar of the Command Menu, click **Tools**, and then **Convert project to 2024**.
   The **Convert to Petromod 2024 project** dialog box opens.



2. In the **Source directory (Petromod 20XX)** box, select or enter the path of the project directory you want to convert.
   The title of the field changes to the Petromod version of the source directory after selection. The current project directory is shown by default.

3. In the **Destination directory (Petromod 2024)** box, select or enter a path for the Petromod 2024 project.
4. Select **Only Input** or **Input + Output** as required.

Note: Copying the output is only intended to view previous results without having to re-simulate the models. Re-running the simulation with the current simulator will most likely produce slightly different output. Also, some workflows (such as nested model extraction) might not work as expected with output from previous Petromod versions. If you encounter any issues, re-simulate the models with the current simulator.

For Nested Models: When you convert Petromod 2023 projects to 2024, the precalc folder containing the extracted boundary conditions from the parent model will also be copied.

5. Select or clear the **Delete intermediate project versions** check box as required.

   If you launch a conversion spanning over several versions of Petromod, from for example, a Petromod 2017 project to the current version, Petromod performs this task step-by-step, creating intermediate projects for each Petromod version in between. The **Project Manager Output** dialog box lists the conversion log step-by-step. This means: *Convert Petromod 2021 project to Petromod 2022 project -> Convert Petromod 2022 project to Petromod 2023 -> Convert Petromod 2023 project to Petromod 2024 project*. The conversion steps are separated by a line of blue hash- symbols. Each conversion is reported as either `Successful` or `Failed`. After the last conversion – into version 2024 – a **Conversion summary** is displayed.

   By default, the intermediate projects are deleted after the successful conversion has been completed. If you want to keep the intermediate versions, (to analyze the changes caused by each conversion individually, or to correct possible errors, for example), you must clear the **Delete intermediate project versions** check box.

Note: This requires more space on your drive, as the destination folder will contain a subfolder for each interim version of Petromod. This means that when you convert a project from 2021 to 2024, there will be folders for the 2022, 2023, and 2024 versions respectively in your destination folder. If you no longer require them, you can delete the project folders of interim versions.

6. Click **OK** to start the conversion. A dialog box opens to ask if you are sure you want to convert the project. Click **Yes** to continue.

   The **Project Manager Output** pane opens to enable you to keep track of the conversion process. Do not close this window before the conversion has finished, as doing so will interrupt the process. When the conversion is finished, the **Project Manager Output** pane will display the message: `Conversion successful`. If the conversion was unsuccessful, the message `Conversion failed` is displayed. To find out the cause of the failure, check the messages displayed in the **Project Manager Output** pane. If you cannot fix the original project for a successful conversion, contact SLB Customer Support.

   The **Project Manager Output** pane displays success messages in green, warnings in orange, and errors in red.

New in Petromod 2024.3

The following updates are new in Petromod 2024.3.

Simulator

ODRS - On Demand Reservoir Simulation

Petromod 2024.3 introduces the ability to connect a local Petromod installation with High-Performance Computing (HPC) resources in the Delfi digital platform. This functionality enables users to build their models on-premises and simulate them using the full computational power of the Delfi HPC infrastructure.

Key features and requirements:

1. **Delfi On Demand Reservoir Simulation (ODRS) subscription:**
   - This new capability requires a **Delfi On-Demand Reservoir Simulation (ODRS)** subscription.
   - Petromod users must purchase this subscription to submit simulations directly to the Delfi HPC cluster.
2. **Petromod Core Builder license for new users:**
   - New users can purchase the Petromod Core Builder license, which includes all the necessary modules to build 1D, 2D, and 3D models locally.
   - Once the models are built, they can be seamlessly submitted to the Delfi cloud for simulation using ODRS.
3. **Benefits of ODRS integration:**
   - **Scalability**: ODRS enables users to simulate large and complex models in parallel, significantly reducing simulation time.
   - **Resource optimization**: Users no longer need to worry about local computer resources, hardware maintenance, or software updates, as all simulations are handled in the cloud.
   - **Efficiency**: The integration leverages the existing ODRS infrastructure to provide on-demand basin modeling simulations, ensuring flexibility and scalability for users.

By combining the flexibility of local model building with the computational power of the Delfi HPC cluster, Petromod 2024.3 unlocks new possibilities for basin modeling workflows, making it easier to handle large-scale simulations efficiently and cost-effectively.

Enhancements and bug fixes in Petromod 2024.3

A small selection of important changes, further enhancements, and bug fixes are listed below.

General

Licensing

The license error message was updated to provide more useful information to the user where a license is missing. The error message now indicates the minimum license date required to run an application. In previous versions, this was simply called “version” which could lead to some confusion over which license was required.

Petromod 1D

Erosion after thrusting

In Petromod 1D, erosion of more than one layer after thrusting was not allowed. Instead, a misleading error was printed indicating that a layer cannot start and end deposition at the same time. Now, the erosion process for more than one layer after thrusting works as expected.

PetroBuilder 2D

Crustal layer model

Thickness or Depth has been renamed to **Thickness or Depth (base)** to avoid confusion. The crustal layer model requires the base depth of the crust and mantle, but in Petromod depth normally refers to the top of a formation. Therefore, this renaming specifies exactly what input is required.

Import lines to new paleosections

In previous Petromod versions, it was possible to import lines to new paleosections for 2D models containing erosions. This was inconsistent, since Teclink 2D models handle the erosion with the paleosection geometries instead of the erosion process. From version 2024.3 onwards it is not possible to import lines to new paleosections if the model contains valid erosion entries.

Petrobuilder 3D

Crustal layer model

Thickness or Depth has been renamed to **Thickness or Depth (base)** to avoid confusion. The crustal layer model requires the base depth of the crust and mantle, but in Petromod depth normally refers to the top of a formation. Therefore, this renaming specifies exactly what input is required.

Delete maps

In previous versions, there was a bug that did not allow the deletion of the last map in a folder. When the user attempted to delete the last map in a folder, it appeared as if the map was deleted but it appeared again when reopening the model. This has been fixed.

Surfaces import in Zmap format

Some surfaces in Zmap format could not be imported into Petromod if some rows in the file were shorter than the others before a complete line of a map was written. Some applications make the columns shorter to improve readability, however this was problematic when importing this data into Petromod. This has been fixed. Now surfaces in Zmap format can be imported even if they are written in the way described above.

Crash due to non-existent IDs

In previous versions, there was a crash related to clearing and recreating the **Age Assignment** table if a layer was assigned to the **Water Depth** or **Paleo Depth** table. The crash happened when switching the view to Simulation preview. This happened because Petromod could not find the layer IDs after clearing the table. This has been fixed.

Kinetics editor

Selection commands

In previous versions, certain actions, such as selecting main folders (for example, Kinetics and Secondary Cracking), individual Secondary Cracking Reactions, or Component Groups, incorrectly appeared as commands in the undo and redo widgets, despite these actions not being functional with undo and redo. This issue has now been fixed, and these actions no longer appear in the undo and redo widgets.

Simulator

Crustal heat flow run

After fixing a bug in 2024.2 the tectonic subsidence calculation of the McKenzie Crustal Model calculation was affected. This led to unrealistic and wrong results for the calculated heat flow and subsidence maps. This has been fixed and now works as expected (and as it used to work in Petromod 2024.1). The Crustal heat flow run now also prints the calculation time.

Lithology mixing

An issue was identified in crustal heat flow simulations for models containing lithology mixes. This problem occurred specifically when the lithologies used for mixing were created from scratch in the Lithology Editor, rather than being copied from existing lithologies.

When attempting to start a crustal heat flow simulation with such custom lithologies assigned, the simulator would terminate with an error stating that the density could not be determined due to an unknown lithology. This has been fixed.

Advection

Advection is highly sensitive to elevated water flow rates. If the flow rates are excessively high, the simulation may terminate with a convergence problem error. Previously, the error message provided to users was unclear, making it difficult to identify which settings needed adjustment to successfully run the model.

This issue has been addressed by improving the error message to provide clear guidance on the specific settings that need to be modified, enabling users to resolve the issue more efficiently.

Injection pressure

In previous versions, a bug caused the geometry of the model to display a small elevation artifact, even when no further compaction was present. This issue was traced to negative overpressures generated during component injection, which led to abnormally high effective stress and reduced porosities. The issue has now been resolved by modifying the effective stress calculation to exclude negative overpressures caused by component injection, ensuring accurate geometry and porosity results.

Negative overpressure

A new warning message has been implemented to notify users if negative overpressures are detected during the component injection process.

Warning Message: `Negative overpressure calculated after injection. This may occur due to injection into a low-permeable layer or into a cell of a high-permeable layer adjacent to a low-permeable layer. Please review the injection point and rate, and/or consider adding more sublayers to the selected injection layer.`

Teclink 2D

When simulating 2D Teclink models, geometry issues could occur if layers were present in older paleosections but their deposition age in the **Age Assignment** table was defined at a much later time. To address this, a warning message has been added to alert users about the potential issue:

```
Warning: Layer is present in paleo section x Ma but deposited at x Ma.
This can generate artifacts in paleo geometry.
```

Open Simulator

Executing scripts on large models

Previously, there was a limitation when executing Python scripts on large models. The limit was defined by the number of cells in the model and the number of events. It was not possible, for example, to run a python script on a 100-million cell model that contained more than 21 events, or a 40-million cell model that contained more than 53 events. This limitation has been fixed, and now open simulator can be also used for large models with a large number of events.

Nested model extraction script

Previously, when executing the nested model extraction script after a simulation, users encountered an unclear error message when the process ran out of memory. This lack of clarity made it difficult for users to understand the cause of the issue.

To address this, the error message has been improved to explicitly state that the extraction process was aborted due to insufficient memory. This update offers actionable feedback ensuring smoother workflows.

Viewer 3D

Autosave session

Autosave session is a very useful tool to save time after customizing views in the Viewers. However, in Viewer 3D, the autosave session option did not stay selected when closing the Viewer. Therefore, all the changes made in the view after reopening the Viewer 3D were not saved. This has been fixed.

Iso-depth surfaces export

A bug was identified in PetroMod 2024.1 during the enhancement of the **ISO objects** option. When exporting ISO surfaces using the **Save Top Overlay** option while displaying a specific overlay, the overlay values were not retained in the exported map. Instead, only the ISO surface values were displayed. This issue has now been resolved.

API for IP accumulations

In previous versions, the API values were only shown for Flowpath accumulations. Since Petromod 2024.3 this value is also calculated and displayed for IP accumulations.

Map Export

An issue was identified when exporting overlay maps in Viewer 3D for models with layer ages set to decimal values that are not a power of two (for example: 2.6, 0.05, and so on). During the export process, the **Failure** window displayed the non-exported map, preventing successful export. This problem occurred because the age values were converted from a string to low float precision, and then compared with high double precision, leading to mismatches. This issue has been resolved.

Workaround: For Petromod 2024.1 and 2024.2 the issue can be mitigated by adjusting the layer ages to values that are a power of two. For example:

- 2.6 → 2.5 (equivalent to 5×2^{-1})
- 0.05 → 0.0625 (equivalent to 2^{-4})

IP Express

Pick color for Rock Properties

The pick color tool did not pick the correct colors when displaying a horizontal slice. This has been fixed.

Workaround for previous versions: Pick the colors from an inline or crossline.

HPC Job Launcher

Anonymous user

Previously, when submitting jobs to the Delfi cloud, the Petromod Project Browser displayed “simulated by petro” as the user information for all simulations. This made it impossible to identify which user had submitted a specific job, leading to challenges in tracking and managing simulations, especially in collaborative environments.

To address this issue, Petromod has been updated to check the user submitting the simulation and record this information accurately in the Project Browser.

Known issues

The following content summarizes known issues and limitations.

Command Menu

Conversion: Problems with output copied from older versions

If you select **Input+Output** when converting projects from an older Petromod version, be aware that this is only intended for viewing previous results without having to re-simulate the models. Some workflows (such as nested model extraction) might not work as expected.

Workaround: If you encounter any issues with output copied from previous Petromod versions, re-simulate the models with the simulator of the current Petromod project.

Nested Models

Nested model horizon geometry after simulation

The horizon geometry for the nested models is taken automatically from the extracted boundary conditions of the parent model. Thus, the geometry of the nested model is not taken by default (in case it differs from the parent model).

Workaround: Use the **Nested model boundary conditions** table to assign a depth boundary condition from the local model. By doing this, Petromod uses the geometry of the nested model, instead of that of the regional model.

Note: It is necessary to modify the paleo water depth in the nested model to match the deposition of the regional layers not present in the nested model. This is important because the nested model might not contain all the overburden layers as in the parent model.

Nested model boundary conditions

Enable

Local

Category	Age from [Ma]	Age to [Ma]	Face	Layer	Type	Fraction [%]	Value	Unit
Depth	200.00	0.00			Local			

HPC Job Launcher

Simulation results are not downloaded

The simulation results are only download when the **HPC Job Launcher** window is open.

Workaround: If this window is closed for any reason, reopen it to download the simulation results.

Download results from multiple models

Downloading of result files for a model from the HPC Job Launcher is not done in parallel. If several models finish at the same time, they will download one after another.

PetroBuilder 2D

Holes in gridded faults

When a fault consists of two or more segments, the gridding algorithm would sometimes grid them as separate faults. This can result in gaps in gridded faults.

Workaround: Ensure that faults consist of only one segment before gridding.

PetroBuilder 3D

Petromod Express: Extraction and injection points are not set correctly in Map View

When you set an extraction point or injection point in **Map View**, the points are not visible and may not be set at the precise location.

Workaround: Set the points in **3D View**.

TecLink models

Quality checks are performed to recognize inconsistencies within TecLink models prior to the start of the simulation. In some instances, your older TecLink models (models build prior to Petromod 2016.1) may not be accepted by the simulator and the simulation will not start. In most cases error messages will be displayed to explain how your model must be updated to pass the quality criteria. Some of the most common inconsistencies are as follows:

- Check that the oldest paleo-section with no multi-z values has a block assigned which forms the parent block of all blocks in the second oldest section.
- Ensure that the paleo-section ages and the **Age assignment** table are consistent. In particular, ensure that layers are not “deposited” after they appear in a section.
- Check that all parent/child block relationships are correct.

If you cannot find a solution to pass the consistency checks for models built with Petromod versions older than Petromod 2016.1, contact SLB support through the Customer Care Center

Well Editor

LAS Import

When you import LAS files and then create calibration data, the units are displayed incorrectly. This is because the unit set in the file is not automatically imported, leading to falsified values.

Workaround: To display the correct values, you must change the unit settings to the unit used in the file before importing the LAS file. The correct values will then be shown.

Lithology Editor

Rock-Stress parameters for salts

With the release of Petromod 2018.1, we updated our rock-stress default parameters for lithologies to be more realistic in basin and petroleum systems modeling workflows.

During the project conversion to Petromod 2018/2019, the rock-stress parameters are updated for the project lithologies.

CAUTION: If you have custom salt-type lithologies (created in Petromod 2017 or earlier), this automatic update of rock-stress properties is not correct. Check your custom salt-type lithologies and update their rock-stress parameters. Use the standard Petromod salt lithology as a reference when modifying the salt rock stress parameters.

Mixing lithologies

Mixing lithologies has the following known issues:

- Formulae cannot be used when mixing lithologies.
- Problems may arise when mixing two or more properties from different theoretical schemes (such as Athy's depth law for compaction and Schneider's effective stress formulation for compaction). You may however use map-based or cube-based lithology mixing instead. The simulator then mixes the properties (such as porosity and permeability), not compaction models.

Kinetics Editor and Component Editor

Potential data loss when saving user-defined data

Warning: The Kinetics Editor and the Component Editor write data into the same files. This could potentially result in data loss or data corruption if:

- Several people are working on the same set of data within one project.
- On your desktop, both the Kinetics Editor and the Component Editor are open and you alternate between both while saving changes in each.

Heat Flow Calibration Tool

The Heat Flow Calibration tool might abort when used on models larger than 13 million cells.

Workaround: Reduce the model's size to perform runs on the Heat Flow Calibration tool.

Simulator

Multi-model overlay inconsistency

The concept of assigning overlay IDs was not designed for multi-model analyses. Therefore, when multiple models are analyzed at the same time, the same overlay IDs might correspond to different properties leading to incorrect interpretations. This inconsistency can be seen in overlays that do not have fixed IDs (such as all overlays related to calibration models, generation potential, biomarkers, Tmax_Kinetics, TR_Kinetics, and so on).

Workaround (there are various checks to make):

1. Always check the overlays in the simulator interface are in the same order.
2. Always use the same number of overlays. We recommend checking them all.
3. Always check that there are the same number of generation potential overlays in all the models within one project.
4. If you are not sure in which order the overlays were selected, check the *ovl3.pmt* file in the out directory to see which IDs were assigned.

Runtime estimation

The runtime estimation prediction is based on the simulation times of several models performed in our Linux cluster in Aachen. Therefore, this prediction might differ from the actual simulation time depending on the machine specifications, processes running in parallel, and model settings.

Flowpath migration

The flowpath migration cannot be fully parallelized. Therefore, the flowpath simulation routine is always performed on the main core. Additionally, when running a model that includes the flowpath algorithm and using sampling, the simulator will run the migration in the original grid. This provides a high-resolution migration regardless of the sampling, but simulation times could therefore become high.

Workaround: Sampling can be performed in PetroBuilder, or Invasion Percolation can be used to avoid high-resolution flowpath calls.

No map-based mixing for Poisson's ratio when rock stress is not enabled

When rock stress is not enabled, map-based mixing for the Poisson's ratio overlay is not considered.

Re-factored TecLink Shift functionality

The **Horizon Geometry** table in PetroBuilder allows you to disable the simulator's shifting functionality by setting **Disable Shifting** to `Yes`. However, this setting is no longer required by the re-factored shift functionality.

If you want to disable the shifting, set the **Disable Shifting** table to `Yes`, and then turn off the re-factored shift functionality using the simulator special option `Onsi 0`.

Extensive disk space required when using "Write output for all risk runs"

When you select to write full model output for all risk-runs (by clicking **Processes & Tools**, **Risk**, and then selecting **Write output for all risk runs**) the risk-simulation creates a full output dataset for each risk-model and scenario. Depending on the number of risk-runs, a huge amount of additional output data might be created. Ensure that there is enough disk space available before you run the simulation.

Note: The above functionality risk-simulations can only be started from the Petromod simulator interface.

2D diagonal faults on parallel processors

Simulating 2D diagonal faults using the Hybrid or Darcy migration methods on parallel processors causes errors. When this occurs, the simulator stops with an error message.

Workaround (there are two options, as follows):

- Simulate the model on a single processor.
- Use the special option `Odfg 0` to switch off diagonal faults.

Convection does not work with locally refined volumetric faults

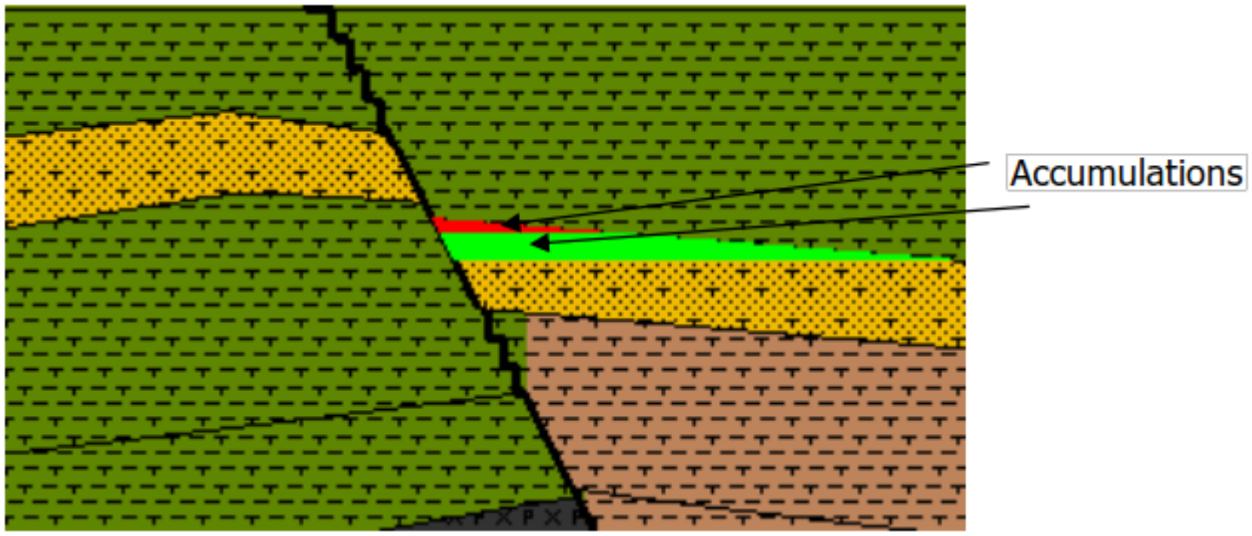
For convection through faults, use the **Volumetric Elements** option in the simulator interface (click **PetroFlow**, then **Fault Method**).

Open volumetric faults running underneath reservoirs do not drain accumulations

This issue occurs when a model is simulated using the following simulator settings:

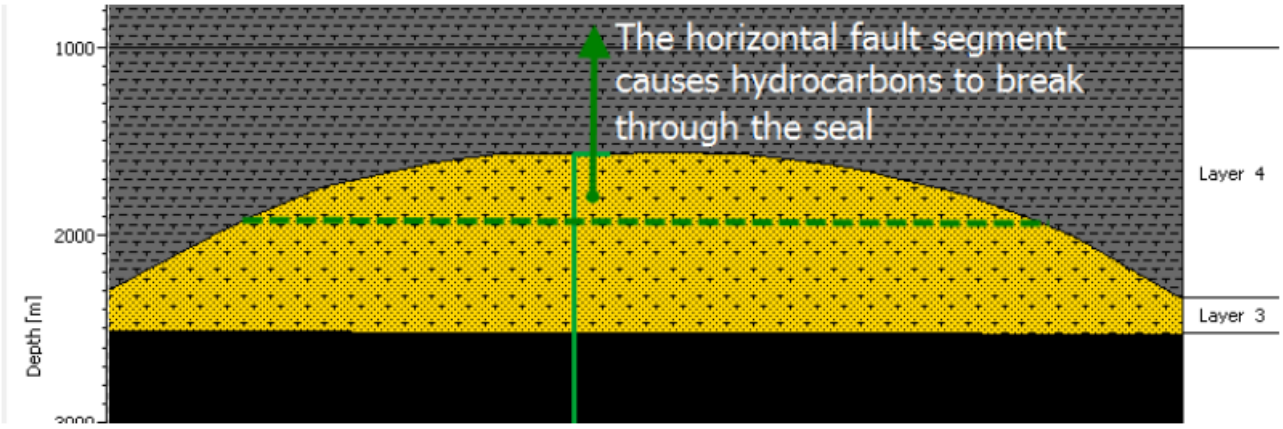
- **Fault method**: `Volumetric faults`
- **Migration method**: `Hybrid`

The below image shows an open volumetric fault running underneath a reservoir layer (yellow). The reservoir contains an oil and a gas accumulation. The hydrocarbons should have drained out of the reservoir through the open fault.



Faults ending at the top of an accumulation cause a breakthrough, even when the seal is intact

When a fault runs through an accumulation and finishes by running along the horizon at the top of the accumulation, the simulator allows hydrocarbons to migrate through the top of the fault and out of the reservoir, even if the overlying seal is intact (see the below image).

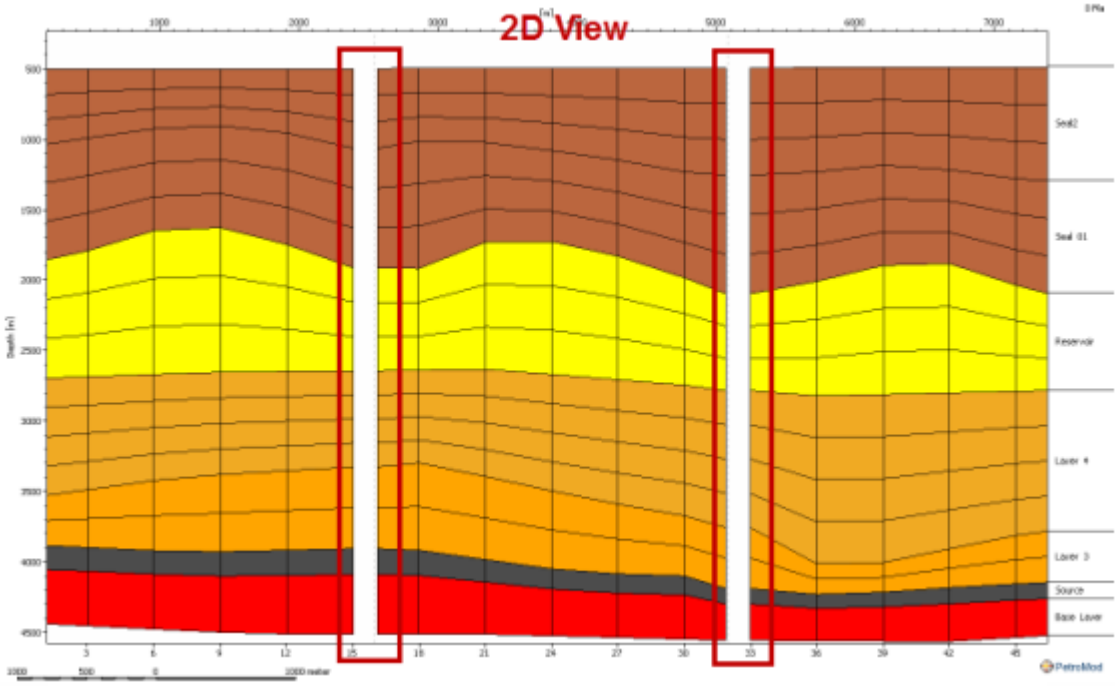


Workaround: Make sure that faults ending at the top horizon of an accumulation do not continue along the horizon. Pay particular attention to the gridded model – even if your pre-grid fault ends exactly at the horizon, the gridding algorithm might extend the fault along the horizon to the next grid point. In this case, edit the pre-grid fault as required and re-grid the model.

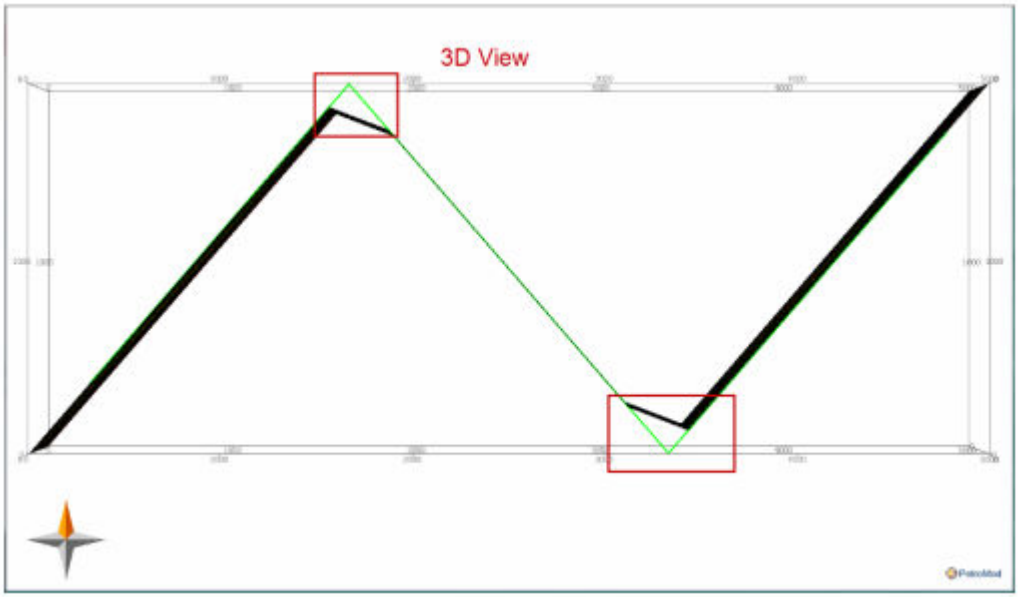
Viewer 2D

Gaps in models in Viewer 2D

Gaps can appear when viewing 2D models in Viewer 2D. This is a purely visual problem based on current limitations of Viewer 2D. The simulated model itself is complete and does not have any gaps. The gaps occur at locations where the cross-section turns through an angle and the turning point does not lie on a grid point.



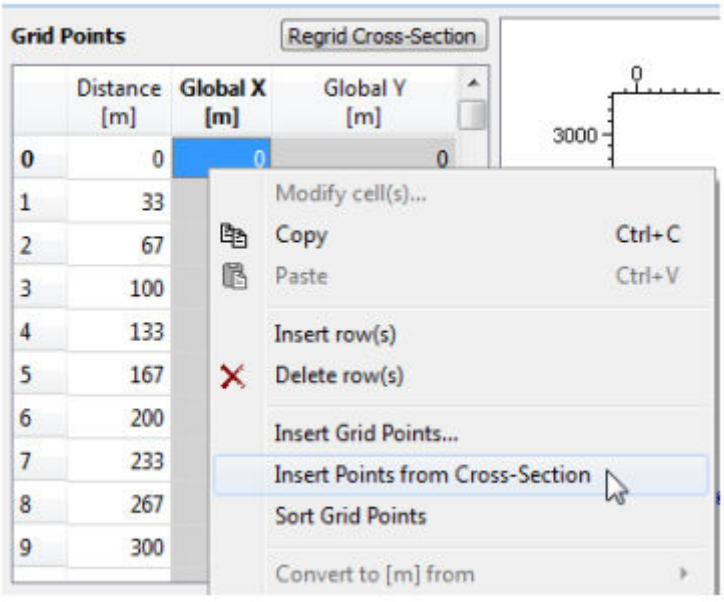
The below image shows Viewer 2D looking down on the cross section of a 2D model (on the **3D View** tab).



The red rectangles mark the locations where the cross-section turns through an angle. The green line is a pre-grid horizon and represents the cross-section as entered by the user in PetroBuilder 2D. The black line is the cross-section as represented in Viewer 2D. You can see that the cross section in Viewer 2D does not turn at the same location as the pre-grid horizon. This is because the turning point of the pre-grid horizon does not lie on a grid point. Viewer 2D shifts the turning point to the adjacent grid point which results in gaps at these locations. As mentioned above, this is a visualization problem only, there are no gaps in the simulated model.

Workaround: Add grid points at each point where the cross-section turns through an angle. The easiest way is to insert a grid point for each cross-section point:

1. Open **PetroBuilder 2D** and load your model.
2. On the **Processes** pane, expand the **Grid** folder, and double-click **Modify Grid Points**.
3. Right-click anywhere in the **Grid Points** table and select **Insert Points from Cross-Section**. There will now be a grid point for each cross-section point.



4. Click **Start Modify Grid Points** to apply the new grid points.

Extraction of faults from 3D models to 2D

Currently, the extraction of faults from 3D models is not supported. If you extract 2D sections from Viewer 3D, the faults will not be transferred to the 2D model.

Viewer 3D

No proper filtering of accumulations according to user-defined criteria

The option for filtering accumulations according to user-defined criteria (such as Flash Calculations, Depth, and so on) does not always work properly.

PetroCharge Express

Application remains in waiting mode for a long time after opening a file

When loading files from a network drive, PetroCharge Express often does not respond for a long period of time.

Workaround: Load files by clicking **Files**, and then **Open Project (Quick mode)**.

PetroReport

Incorrect report balance for IP migration with polygons

When you simulate a model with the IP migration method and use polygons in PetroReport, the balance calculations for the polygons are incorrect.

Appendix - Help and support information

Petromod is provided by © SLB. The software has been designed by the SLB Aachen Technology Center (AaTC).

Submit a support request

Visit the SLB Software website at *http://www.software.slb.com*.

1. Click **Support** on the menu bar. The **Support** page offers the following resources:
   - **Product Support**: Information related to the products.
   - **Support Resources**: Help resources and videos.
   - **Support Services**: Assisted support services and platform to submit support requests.
2. Create a ticket that will be sent to the Customer Care Center: Click **Support Services**, then **Tickets**. **Login** or **Register** when prompted.
   In the ticket, you must:
   - Specify the software product
     Specify the version
     Specify the platform (operating system)
     Give a detailed explanation of the problem
     Add images (file size limited to 2 GB).
3. Use the **Data Exchange** to attach files to a ticket by uploading them using **Secure File Transfer**. **Login** or **Register** when prompted.
   a. Click **Support Services**.
   b. Click **Data Exchange**.
   c. Enter the **Ticket Incident Number** of the previously created ticket and your e-mail address.
   d. Select the **HTML** or **Java Applet UI** upload method: HTML has a default file size limit of 2 GB. Java has no file size limit.

Additional help information

Petromod provides the following help information:

- The PDFs of the user guides, installation guide, and release notes are included in the installer and can be downloaded from the **Petromod Documentation** page of the **SLB Support Portal** using the **Product Support** as explained above.
- Task and process-specific information is available by clicking  or  in PetroMod.
- The **Petromod Help Center** provides online access to the user guides and links to the SLB Software website. Open the **Help Center** from the **Help** menu in any Petromod module.