

What's New in Petrel 2015

Access to deep science, enhanced integration, and improved productivity

KEY NEW FEATURES:

Geophysics

- New Geophysics core
- Mixer tool for better corendering
- Generalized spectral decomposition
- Litho classification

Geology and modeling

- New well model
- Stratigraphic layering
- Declustering property modeling
- Geopolygons

Petroleum engineering

- Decline curve analysis
- Global control of units
- Comprehensive initial conditions
- Improved performances

Drilling

- Interactive well path design tools
- Well plan objects
- Drilling structure slots
- Lateral well plans

Collaboration

- Supports 3D grids and properties in the Studio* E&P knowledge environment
- Microseismic and production data support

Petrel Guru

- Quality Reporting tool

Finding, characterizing, and exploiting new and existing reservoirs is increasingly complex. To overcome these challenges, we must continually improve and bring innovation to the way we work. The Petrel* E&P software platform addresses these challenges by bringing disciplines together with best-in-class science in an unparalleled productivity environment.

Petrel 2015 includes updates to geophysics, geology and modeling, petroleum engineering, drilling, and the Petrel Guru module, as well as enhanced integration with the Studio E&P knowledge environment.

Increased usability and collaboration

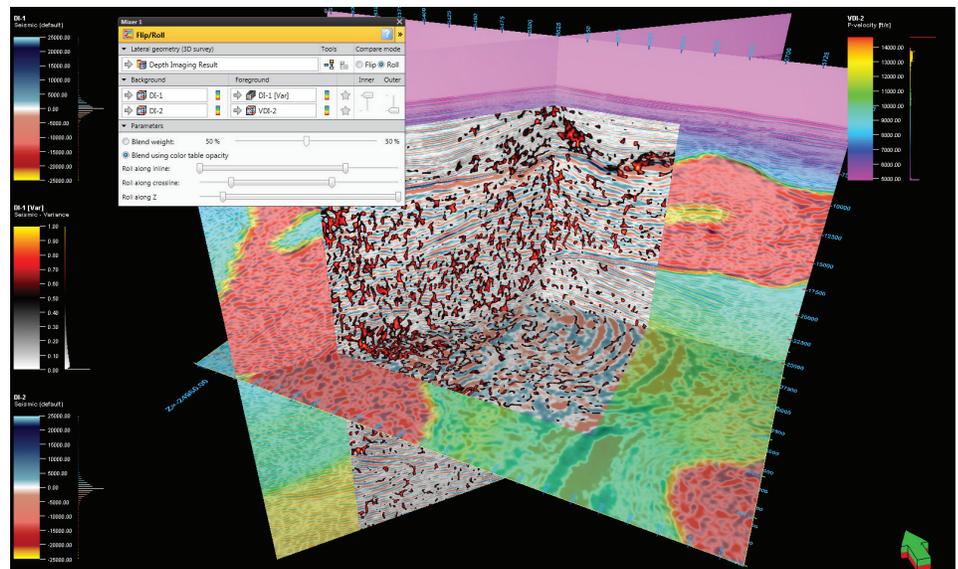
With Petrel 2015, users benefit from a focused environment in which key tools are presented in context, mouse clicks are significantly reduced, and users are kept focused on interpretation, models, and data. The full GPU rendering drastically improves the visualization of large datasets, such as surfaces, seismic, and models.

Grids and properties in 3D are now supported in the Studio environment for enhanced collaboration between geoscientists and petroleum engineers. Microseismic and treatment data, geopolygons, drilling, and production have been added to the Find workflows, while significant performance enhancements have been implemented to the transfer of data.

Geophysics

Geophysics core

The new Geophysics core leverages the Petrel platform and provides a toolset tailored for geophysics workflows. It enables companies to undertake geophysical map-based approaches, covering seismic interpretation, well correlation, seismic well tie, seismic attribute computation, and structural framework construction. There is no geocellular modeling capability in this core.



Mixer covisualization capabilities include flip/roll, RGB/CMYK blending, and masking. (Data courtesy of WesternGeco)



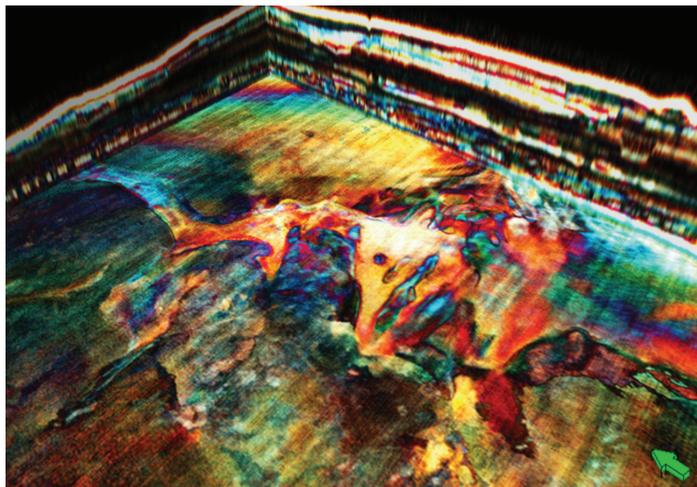
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Structural and stratigraphic interpretation

Horizon interpretation can now be linked with stratigraphy, incorporates more metadata, and has improved rendering for large interpretation displays. It also incorporates a usability enhancement to switch interpretation modes quickly. Interactive mesh editing allows the interactive editing of any mesh body (e.g., salt) using push/pull and smooth/refined functions for more accurate interpretation of complex shapes.

Seismic overlay in the interpretation now allows you to apply a user-defined opacity function for the displayed foreground vintage. The Mixer tool is an intuitive and interactive visualization tool for comparing and evaluating multiple seismic cubes simultaneously and synchronously with three types of workflows: flip/roll, RGB/CMYK blending, and masking.

A generalized spectral decomposition volume attribute provides a hybrid method of existing short-time Fourier transform (STFT) and continuous wavelet transform (CWT) techniques in the industry, giving the interpreter better control of the vertical and the frequency resolution simultaneously.



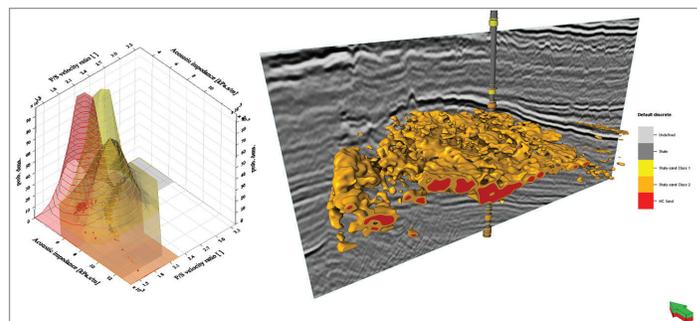
Generalized spectral decomposition result, RGB blended using the Mixer tool. (Data courtesy of Geoscience Australia)

Well seismic calibration and velocity modeling

Interactive bulk shift has been added to the seismic well tie process, as well as continuous alignment for accurate and fast ties. Multiwell extended white wavelet extraction is available to extract wavelets from multiple wells at the same time. Velocity modeling performance and robustness has been significantly improved, allowing for simple velocity model building and faster depth conversion or advanced velocity modeling, including average or interval velocity cubes.

Quantitative interpretation

Litho classification is now part of the Petrel Quantitative Interpretation (QI) module and is used to generate a lithocube from a seismic inversion result, including probability of hydrocarbon or rock typing. QI crossplot has been enhanced to be able to incorporate more data types, such as horizon attributes and new PDF curves for lithology classification.



Litho classification and prediction from seismic inversion results. (Data courtesy of WesternGeco)

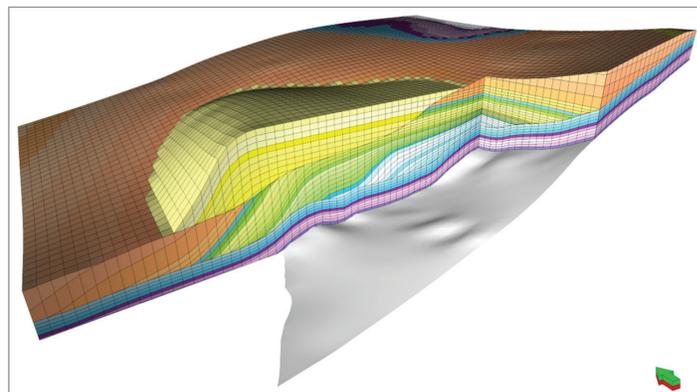
Geology and modeling

Fundamentals

A new well model has been incorporated to support complex trajectory types for well surveys and plans, as well as side-track or lateral wells. Well correlation ghost curves allow you to create ghost curves for a single curve, for a single track with multiple logs, and for multiple tracks. Well list/saved search supports well data management and control visualization. The Conformal gridding method has been added to support 2D mapping workflows while editing surfaces. Map-based volume calculation results have been enhanced with capabilities to report gas volumes.

Structural and stratigraphic modeling

Volumes in place can now be calculated from the volume-based zone model of the structural framework, while isochore/isopachs can be calculated directly from the horizon of the structural framework. Stratigraphic layering allows a better generation of layers during the structural modeling process by using the implicit function from the volume-based modeling structural framework — particularly useful in the case of erosion and discontinuities.

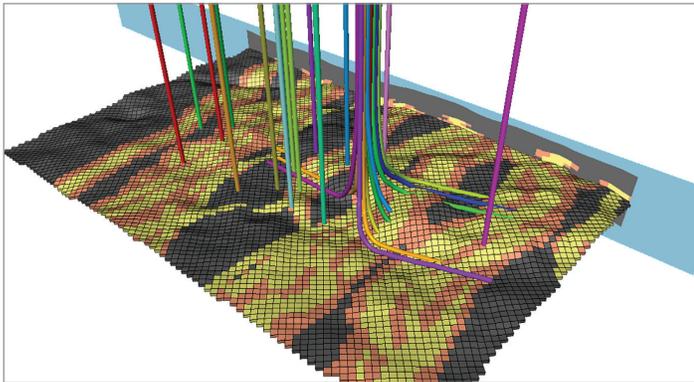


Stratigraphic layering of complex sedimentological sequences.

Geological modeling

Decustering options allow you to correct for sampling bias in either facies proportions and histograms or the petrophysical property distribution caused by horizontal and clustered wells. The weighting option in scale-up well logs allows upscaling using a continuous log curve as weight.

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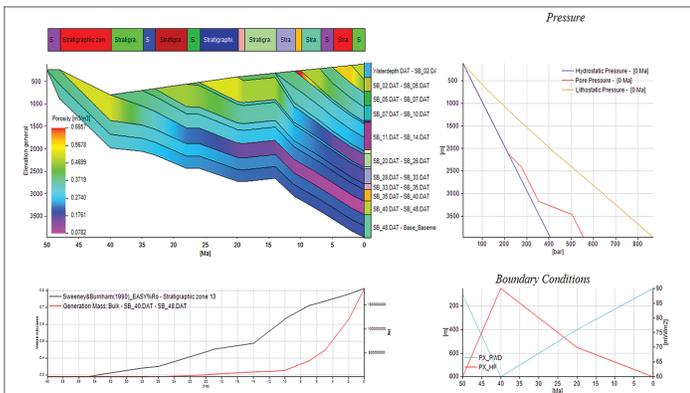


Declustering techniques for drilling in high-pay areas.

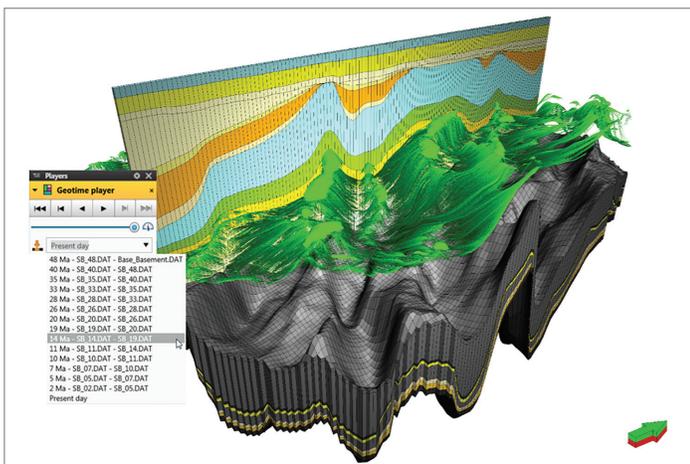
Exploration geology

Geopolygon is a new data object for representing closed polygon data with holes and attributes for cultural data and prospect risk evaluation maps.

Petroleum Systems 1D and 3D simulation cases can be directly simulated in the Petrel platform (including definition of thermal boundary conditions), or exported to PetroMod* petroleum systems modeling software for further refinement and simulation. The Geotime player allows visualization and comparison of results from 3D petroleum systems simulation through geological time. Time maps and time trends can be created for the boundary conditions of the petroleum system model.



Improved Geotime window.



Geotime player for dynamic petroleum systems models brought directly from PetroMod software.

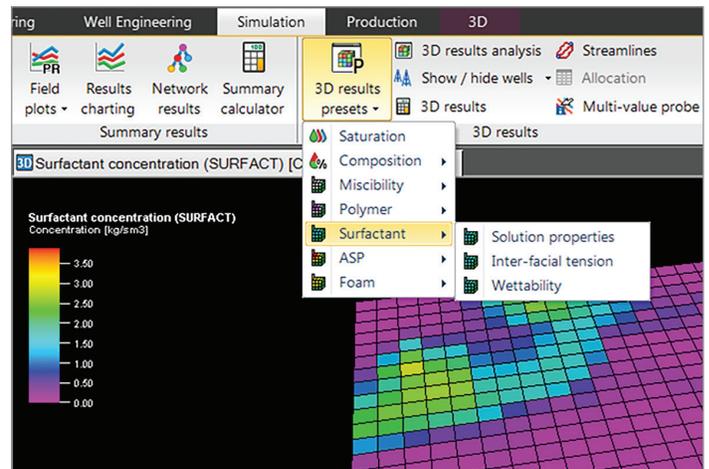
Petroleum Engineering

Reservoir engineering

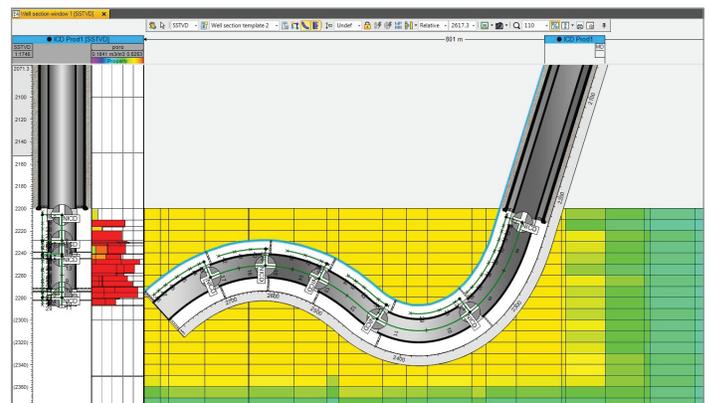
The setting of initial conditions is now more efficient—they can be generated from a new 'initial conditions' process or the 'initialize from maps' process. The initial condition process is also now separated from the process for making a fluid model. Flexible units control for reservoir engineering means that you can define simulation input data in a unit system different from that used in other domains by independently setting or customizing the unit system in supported dialog boxes and spreadsheets for key Petrel platform dialogues.

Well searches based on production attributes in the Studio environment enable you to find wells based on KPIs, for example "time on production" and "total gas recovery till date". Automated reports generated for reservoir characteristics and performance can be created easily, while completions can be displayed in deviated tracks in the well section window.

Improvements in the performance of simulation export to the INTERSECT* high-resolution reservoir simulator have also been made. Results analysis in 3D is facilitated by one-click generation of multiple 3D windows, based on analysis purpose and on case (e.g., EOR presets). The use of repeat formation tester and production logging data in an objective function has also been simplified. Coupled simulations with the INTERSECT simulator can be made quickly with the simplified ENS network feature.



Results analysis in 3D is facilitated by one-click generation of multiple relevant plots.



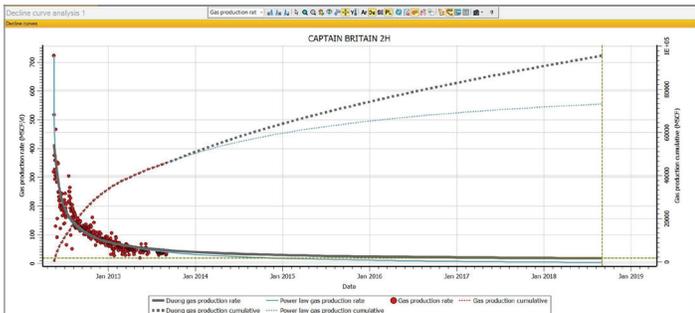
Completions display in a deviated track.

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Production

Production forecasting using decline curves analysis (DCA) can be conducted for selected phases of interest, noisy data excluded, and analysis parameters manipulated for best fit. Supported analysis methods include Arps, stretched exponential, Duong, and power law (Petrel 2015.2). Reservoir calibration can be performed using industry-standard and Schlumberger patented rate transient analysis techniques.

Production interpretation, well deliverability, production analytics, and the data connector for OFM* well and reservoir analysis software are now included with the Reservoir Engineering core, Shale core, and Combined core licenses.



Decline curve analysis in the Petrel platform.

Drilling

Drilling structure slots are used to accurately place the wellheads and to help organize wells on the platform structure. Interactive well path design tools are provided for digitizing and dragging the design points in the 3D window. Well plan objects can be searched in the Petrel platform index by performing a search in the Studio environment. Traveling circles are 3D traveling circles created along the well plans to estimate the distances between the subjects well and the nearby objects. Lateral well plans can be inserted into the surveys and plans of a lateral well. Anti-collision refresh indicates if any input data has changed since the last calculation was performed.

Studio E&P knowledge environment

Grids and properties in 3D are now supported in the Studio environment for enhanced collaboration between geoscientists and petroleum engineers. A new well model is fully supported, including trajectory types for well surveys and plans as well as new side-track or lateral wells. Microseismic and treatment data, geopolygons, drilling, and production have also been added to the Find workflows. Sharing raster logs is now as easy as sharing conventional logs, while horizon interpretation transfers are now up to 10 times faster.

Petrel Guru

The Petrel Guru module and the Help Center are combined under the same interface to provide integrated user assistance with access to training, guided workflows, and in-context guidance. The Quality Reporting process allows quality tests, tracking, auditing, and reporting of all results into customizable templates. These reports can be saved as Microsoft Word documents, edited, shared by email, and stored inside the Petrel platform.



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