



QINTEGRAL

Eligo™ Seismic Petrophysics

Prepare wireline data for geophysical analyses

What is the fastest way to prepare petrophysical data for use in a wide range of geophysical applications?

APPLICATIONS

Prepare wireline logs for use in a wide range of geophysical interpretation methods including:

- AvO modelling
- Potential fields modelling
- Seismic-well ties
- Seismic inversion
- Geomechanics
- Pay evaluation

SPEED

Eligo is an efficiency tool and TrendLab is highly interactive. Studies are done in “real time”.

COST EFFECTIVE

Pay only for the time you need. Prices start from AUD\$344+GST each for a 5-day tailored lease.

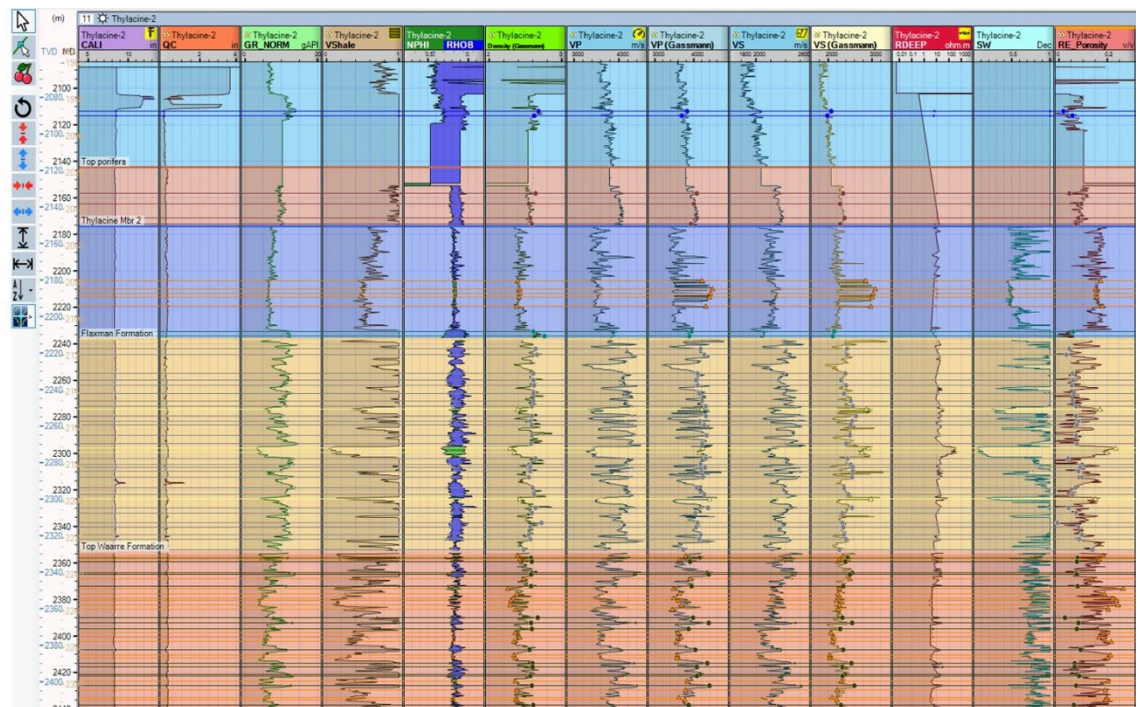
ABOUT QINTEGRAL

Founded in 2018 by Dr Jarrod Dunne, we have global experience in geophysical interpretation methods spanning a range of challenges in petroleum and minerals and underground storage. We offer consultancy services and software solutions with a focus on achieving true integration between geological and geophysical information.

Eligo and Trendlab (next page) are petrophysical analysis software (Windows OS) designed to speed up the analysis of wireline data for use in a wide range of quantitative geophysical applications. Eligo addresses the “seismic petrophysics” workflow – conditioning well logs for high quality seismic-well ties, AvO modelling, inversion and rock physics trend analysis. Traditionally this has been a time-consuming task, often performed using petrophysical software designed for log evaluation of net pay. Eligo is built around a standard seismic petrophysics workflow that QIntegral has developed and used in many projects from around the world. Its functions include:

Editing	Evaluation	Conditioning
Flag hole condition	Lithology fractions	Normalise Gamma Ray logs
Log splicing	Porosity	Gassmann fluid substitution
Editing bad data	Saturation	Gassmann without shear sonic data
Synthesize/replace logs (from trends)		Blocking

The software architecture means that new functions can be added or adjusted with minimal coding effort. Synthetic seismic functionality is expected to be added soon.



Direct links to TrendLab

One of the main functions of Eligo is to fast-track preparation of rock physics trends for use in Quaiquito™. This is achieved using the “cherry picking” method whereby individual log samples are co-interpreted across multiple logs as likely end member lithologies. Candidate “cherries” (shown as joined up points in the well log view above) are transmitted to TrendLab where robust rock physics trends can be formulated in real time. Eligo also facilitates use of the “automated” method for trend analysis. Evaluated and edited logs can be exported for use in other software packages.

TrendLab™ Rock Physics

Rapid formulation of linked burial trends

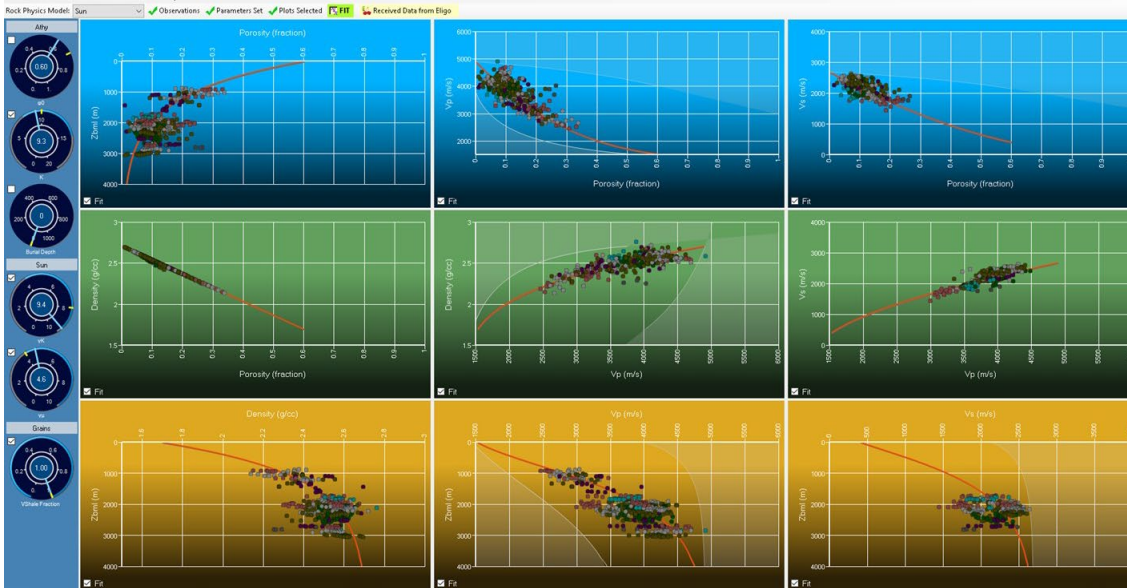


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How can I achieve greater geological meaning when extrapolating away from well control?

TrendLab is user friendly and interactive (Windows OS) software designed to make the task of creating a self-consistent set of elastic rock physics trends a whole lot easier! Conditioned petrophysical data can be sent directly from Eligo™ or existing datasets can be imported from spreadsheets. Trends can be formulated for a growing range of rock physics models, using regressions or adjusted manually using interactive “dials” to control the rock physics model parameter choices.

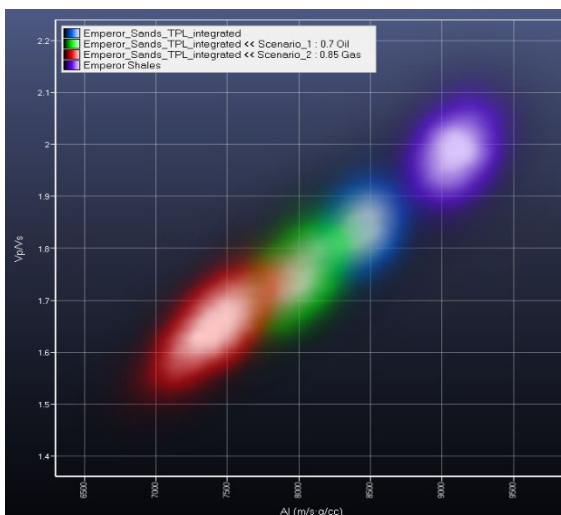
Trends can be compared to those from other analogue basins. Rock physics bounds are used to steer the trend formulation away from non-physical results. Trend formulations built around depositional concepts, in essence initiated from burial depth and porosity relations, also help to extend the accuracy of the overall trend set beyond the limits of well control. More accurate trends means more accurate geophysical modelling in Quiacito™ thereby increasing subsurface predictive confidence.



Trend formulation is normally performed on well log data under brine conditions, either in situ or after Gassmann fluid substitution in pay zones by Eligo™. In TrendLab, the effect of hydrocarbons can be added back in under controlled conditions to generate rock physics templates for the interpretation of AvO attributes.

Facies classification using stochastic rock physics

TrendLab now contains a module for assessing the impact of stochastic uncertainty, including seismic noise, upon trends and AvO attribute templates. This enables a deeper understanding of AvO attribute resolution limits, which improves the interpretation of attribute maps from seismic. 2D and 3D probability density functions (PDFs) can be generated for direct input in the Bayesian AvO classification within OpendTect™. When combined with simultaneous AvO inversion, this opens the door for a rapid and low cost approach towards facies prediction from seismic, applicable to both petroleum and hard rock seismic applications.



APPLICATIONS

- Rock physics trend formulation
- AvO attribute templates
- Attribute resolution testing
- Stochastic rock physics
- Bayesian prior PDFs (2D & 3D)
- Bayesian AvO classification

INTEGRATION

Formulated trends can be sent to Quiacito™ for integrated geophysical modelling. Stochastic rock physics templates can be used to classify facies and fluids using seismic AvO inversion attributes.

PREDICTIVE MODELS

Rock physics based trend formulations enable safer extrapolation away from well control within a basin. Trend set libraries help to compare lithology trends from different basins and can act as guide when well calibration is limited.

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