

## RM01 Lithology/fluid Prediction from AVO Seismic Data

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## SUMMARY

Seismic 3D AVO data from the Alfheim field in the North Sea are inverted into lithology/fluid classes, elastic properties and porosity. The maps provide more reliable estimates of the hydrocarbon volumes in the field.

The inversion is phrased in a Bayesian setting. The likelihood model contains a convolutional, linearized seismic model and a rock physics model. It also contain several global parameters that are estimated from seismic and well observations. The prior model on the lithology/fluid classes is a Markov random field that captures local horizontal continuity and vertical sorting of fluids due to gravitation. The predictions from the posterior model are verified by the use of five blind wells. Hydrocarbon volumes with reliable gas/oil distributions are predicted.

The presentation will focus on the use of spatial statistics in lithology/fluid prediction and demonstrate the improvements made if reliable modelling is done. Validation of the predictions on observations in five blind wells make the results conclusive.



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