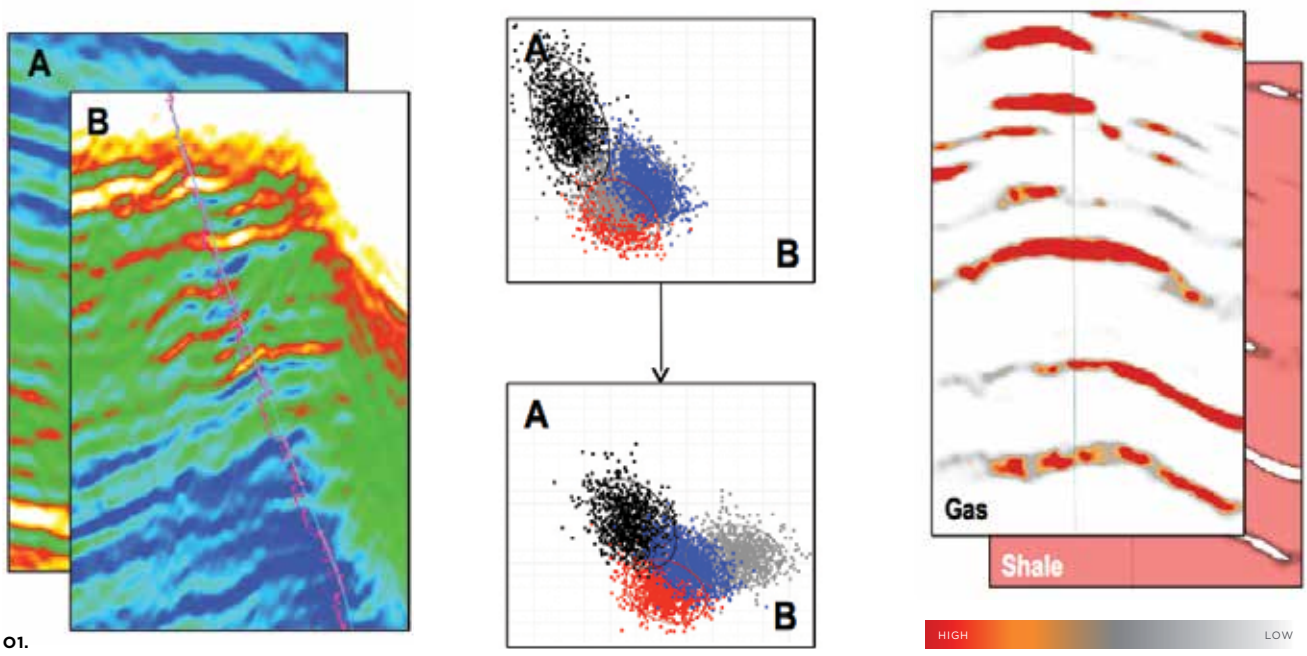
Quantitative Interpretation

The aim of quantitative interpretation (QI) is, through the use of amplitude analysis, to predict lithology and fluid content away from the well bore.

This process should make use of all available data, assist in risk assessment, account for uncertainty and ultimately foster confidence in the predictions. Our most common workflow (shown in figure 01 below) for exploration and appraisal uses absolute rock properties derived from simultaneous inversion and depth-dependent statistical rock physics modelling results to create lithology and fluid probability volumes.

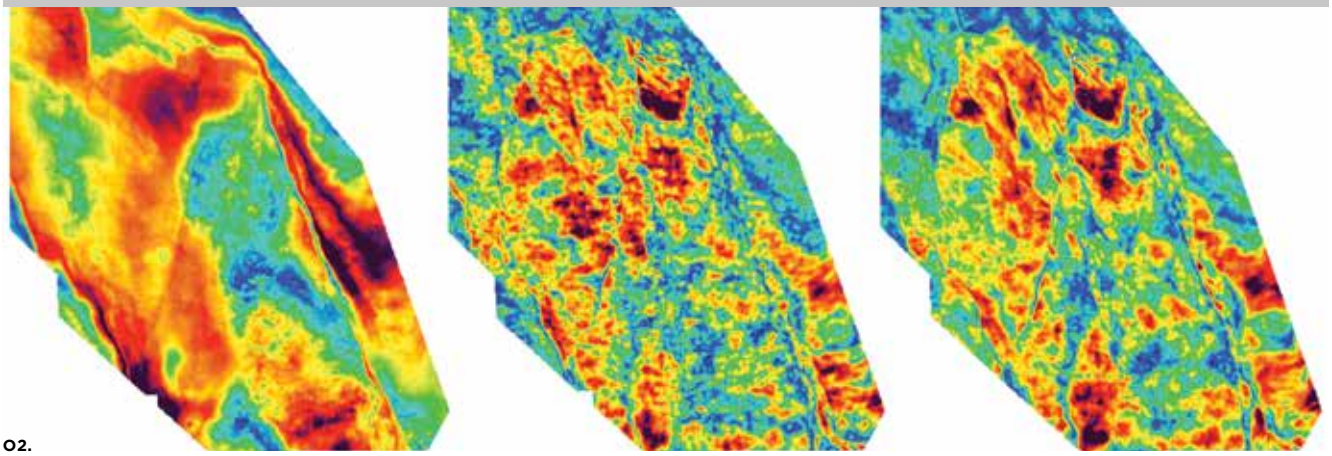
In figure 02, we compare three different versions of the same dataset. Each version is a new reprocessing effort with the most recent on the right. Each map is an amplitude extraction through the 8 Hz component of a spectral decomposition using the inverted acoustic impedance volume as input. On the far left we see only the imprint of the low frequency model. The reprocessing effort used to produce the middle image included bandwidth extension and as a result we now see some influence of the seismic data. On the far right the data was deghosted using DUG Broad as part of a modern broadband processing flow. This has resulted in another step change in the quality of the results resulting in more accurate and precise lithology and fluid predictions.

INVERSION PRODUCTS + DEPTH-DEPENDENT ROCK PHYSICS = PROBABILITY VOLUMES



01.

BRIDGING THE FREQUENCY GAP



02.