

# Seismic Screening for Hydrocarbon Prospects Using Rock-physics Attributes

Per Avseth<sup>1</sup> and Tor Veggeland<sup>1</sup>

<sup>1</sup>Tullow Oil, Oslo, Norway

## ABSTRACT

The field of rock physics represents the link between qualitative geological parameters and quantitative geophysical measurements. Increasingly over the last decade, rock physics has become an integral part of quantitative seismic interpretation and stands out as a key technology in petroleum geoscience. Ultimately, the application of rock physics tools can reduce exploration risk and improve reservoir forecasting in the petroleum industry. In particular, rock-physics templates (RPT), in combination with seismic AVO inversion data, can be used to screen for hydrocarbon prospects during exploration. Rock-physics models are essential in that they help in converting elastic parameters from inversion data to reservoir parameters. Furthermore, the anatomy of rock physics crossplots and the trends observed in petrophysical/seismic data can be linked to geological processes (i.e. depositional and diagenetic). In this presentation we will demonstrate the use of rock-physics templates to identify depositional facies and burial trends in geophysical data. We will also show how we can disentangle fluid trends (i.e. hydrocarbon saturation) from geological trends (lithology and porosity). We show examples from selected deep-water systems from the Norwegian Shelf and offshore West Africa.