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EUROPEAN ASSOCIATION OF GEOSCIENTISTS & ENGINEERS

COLOUR PERCEPTION AND ITS ROLE IN SEISMIC INTERPRETATION: A GEOLOGICAL EXPRESSION STORY

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Seismic interpretation is a key part of the analysis involved in understanding a petroleum reservoir system. Seismic data gives us information about the regional setting, the depositional system, the tectonic history, as well as detailed information about the reservoir itself, aiding understanding of volumetrics, compartmentalization and heterogeneity within reservoir units. Being able to see this information easily, and extract it in a form that can be taken through the subsurface workflow is a fundamental part of seismic interpretation.

The ability to understand the information provided by seismic data is influenced by the way in which the data is presented, as well as by our own intrinsic ability to identify shapes, colours and features. This means that factors such as colour perception, object context and object association can have a significant impact on our ability to interpret the geological information that can be extracted from geophysical data. This presentation covers how we can use an understanding of visual cognition in seismic interpretation and looks at the importance of features such as colour bars and data comparison techniques on how we perceive information.

The processes that we go through to interpret the data can also influence the result that we get out. There is usually a marked difference between answers provided through using a purely objective, data driven approach to interpret seismic data, compared to those provided using a purely subjective, interpreter based approach. So this presentation also investigates where the balance lies between the two approaches and how methods that are both data driven and interpreter guided can be used to get an optimal result.

All these issues and techniques will be discussed and illustrated using exploration and development data sets from around the world. The presentation will be appropriate for both undergraduates and postgraduates, especially those with a geology, geophysics or earth science background.