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The litho-stratigraphy and seismo-stratigraphy investigations along the Jurassic evaporites of the Tanzanian continental margin

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Most of the world's petroleum occurs in sedimentary rocks. The location of petroleum reserves requires an understanding of the nature of the rocks in which the reserves occur, and well logs and seismic data are the main sources for such investigations. This paper focuses on the southern Tanzanian continental sedimentary margin, the Mandawa Basin, that has been explored over the past 50 years for petroleum purposes, with an increasing interest in the last several decades. One of the key issues for petroleum exploration along the entire Tanzanian margin is the extent of evaporite deposition and its diapirism. To overcome these challenges, the methodological approach of combining geological and geophysical techniques has been used in this study in order to characterise the litho-stratigraphy and seismo-stratigraphy of the geological framework. An historical database containing the legacy of 2-D seismic lines, well logs, well data drilled by oil companies since the 1950s was received and used delineating primarily the salt structure in the onshore Mandawa Basin, Tanzania.
The workflow involves the identification of the lithological units from the series of drilled wells in the Mandawa Basin. A well correlation was performed resulting in several geological markers picked in the wells as a control on the position within the borehole. These geological markers are defined and bounded in stratigraphic order, from the oldest to the youngest, according to the responses seen from the geophysical well logs. The results, from the drilled wells data, obtained using seismic-stratigraphic interpretation and analysis of the salt distribution in the Mandawa Basin are indicating sequences and the main structures of the petroleum system.