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# A lithospheric 3D temperature study from the South Atlantic

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The East African continental margin is a passive volcanic margin that experienced a long post-rifting history after break up in Early Cretaceous times. The break up resulted in the formation of a number of basins along the margin. The by far largest depocentre in the South Atlantic, the Orange Basin, was the location of previously performed studies.

These studies of the Orange Basin have been performed to investigate the crustal structure and the temperature evolution of the basin. In this way, they gave way to new insights and to a number of questions. With 3D gravity modelling we found the crust to include high density bodies. Furthermore, a rifting model was developed which explained both the geometry and the thermal constraints of the basin. Now, this study has been extended spatially to cover a larger area and into depth to include the deep lithosphere. The main goal is to combine information on the geometry and properties of the sedimentary part of the system with data on the geometry and physical properties of the deep crust. It was also aimed to integrate both the continental and the oceanic parts of the margin into a consistent 3D structural model on a lithospheric scale.

A 3D temperature model was evaluated for the passive continental margin of the South Atlantic including the lithospheric structure of the margin. We evaluate a case study for different scenarios to estimate the influence of sediments and crustal structures on the thermal field. The calculated conductive field is constrained by temperature measurements and 3D gravity modelling.

At the Norwegian continental margin it has been found that a differentiation of the physical properties of the lower crust and the mantle is needed between the oceanic and continental domains to explain the observations. We aim to compare the younger setting of the Norwegian continental margin with the old passive margin in the South Atlantic. In particular, the South Atlantic is interesting since the southern half of the continent is elevated and the question arises how this might be linked to a deep seated thermal anomaly.