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Lithosphere structure and subsidence evolution of the conjugate S-African and Argentine margins

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The bathymetric evolution of the South Atlantic passive continental margins is a matter of debate. Though it is commonly accepted that passive margins experience thermal subsidence as a result of lithospheric cooling as well as load induced subsidence in response to sediment deposition it is disputed if the South Atlantic passive margins were affected by additional processes affecting the subsidence history after continental breakup.
We present a subsidence analysis along the SW African margin and offshore Argentina and restore paleobathymetries to assess the subsidence evolution of the margin. These results are discussed with respect to mechanisms behind margin evolution. Therefore, we use available information about the lithosphere-scale present-day structural configuration of these margins as a starting point for the subsidence analysis.
A multi 1D backward modelling method is applied to separate individual subsidence components such as the thermal- as well as the load induced subsidence and to restore paleobathymetries for the conjugate margins. The comparison of the restored paleobathymetries shows that the conjugate margins evolve differently: Continuous subsidence is obtained offshore Argentina whereas the subsidence history of the SW African margin is interrupted by phases of uplift. This differing results for both margins correlate also with different structural configurations of the subcrustal mantle. In the light of these results we discuss possible implications for uplift mechanisms.