



How applicable are current models of volcanic passive margin formation?

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The Argentinian Passive Margin provides an exceptional example of a volcanic passive margin that has been a focus, along with much of the South Atlantic, for a number of studies investigating volcanic margin evolution. In this study we use recently acquired, well imaged, seismic reflection data to constrain the margin architecture. These new data provide significant improvements in imaging throughout the oceanic and continental lithosphere that enables us to interpret lower and mid crustal reflectivity, the continental and oceanic moho, seaward dipping reflections and oceanic crust domains.

Despite this high quality imaging uncertainty still remains in both the interpretation of the data as well as the geophysical properties of the margin, including the extent of lower crustal magmatic bodies, the geometry of break-up volcanics and Seaward Dipping Reflection emplacement. Constraining these interpretations have a fundamental control in our understanding of the processes involved in continental rifting and break up.

Interpretation of previous data, as well as existing models of the margin, do not account for such uncertainty in the interpretations. In this study we present multiple seismic-structural interpretations for data that are geometrically valid. We then use a number of techniques, including kinematic restorations, gravity modelling, backstripping and subsidence analysis to test the validity of each of the models.

By addressing the uncertainty inherent in any sub-surface data we can better constrain the suite of likely scenarios. This enables us to challenge the current models of lithospheric stretching in volcanic passive margins.