

The geology and structure of the Mid-Atlantic Ridge near Ascension Island

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The doctoral project proposed here is to integrate the deep-towed TOBI side-scan data with bathymetric, microseismological and nephelometric data from the area between 7-11°S on the Mid-Atlantic Ridge to produce a geological-tectonic map of the spreading axis in this region. The map and the 3-dimensional datasets upon which it is based will then be used to (a) elucidate the structure of the spreading axis, including determining the state of interplay between tectonic and magmatic processes in taking up the spreading movement (b) provide a predictive tool to guide further sampling, hydrothermal prospecting and structural investigations in the area.

Output from the geological-tectonic studies will be fed into finite element models of melting, melt extraction and mantle movement being developed by other investigators within the SPP 1144 to allow the model predictions to be tested directly. We envisage as the outcome of this project information on the geology and geodynamics of the area which is of sufficient resolution to allow quantitative statements to be made about geodynamic and hydrothermal processes which will have super-regional or even global relevance.