

**High resolution volcanology and geochemistry of mid ocean ridge segments flanking the 9°40'S melt anomaly and the Ascension hot spot**

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Mid-ocean ridge volcanism plays a key role in the investigation of melt generation and mantle processes on a global scale. The SPP 1144 MARSouth area is particularly suited to investigate the influences of different mantle sources at high resolution, as fertile mantle (9°40'S melt anomaly) and alleged hot spot volcanism (Ascension Island) are both present together with typical depleted MORB. Results from isotope and high-precision HFSE analyses, performed during the first phase of the project (18 months), show that previous geodynamic models need to be revised, in particular in the light of new Hf-Nd isotope data. Moreover, our new data for submarine and subaerial volcanism on Ascension demonstrate that distinctive mantle source were tapped that are not related to a rising mantle plume. Based on these promising results we will focus our research during the second phase of the project on eruption-scale volcanological and geochemical investigations. The principal aims are to characterize eruption-scale effects of mantle heterogeneities and to unravel the origin of Ascension Island. A second focus will be on the behavior of HFSE (including W) during MORB melting. First result indicate that W-Nb-Ta abundances are little fractionated, which is in marked contrast to experimental predictions. Based on an expanded dataset, we will address this conundrum by trace element modeling.