

Passive electromagnetical and seismological measurements to study the deep melt structure beneath the mid-Atlantic ridge (MAR)

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Mid-ocean spreading axes and divergent oceanic plate boundaries play a major geological, geochemical and biological role for the evolution of the oceanic crust and the oceanic system in general, as outlines in the call for proposals of SPP1144. Our research proposal has the goal to resolve regions of an anomalously low shear velocity, seismic attenuation and electrical resistivity beneath the mid-Atlantic spreading axis within the study region of SPP1144. Such regions are indicative for the presence of partial melt with varying melt connectivity. We propose a joint marine electro-magnetic and seismological experiment along the same profiles. The joint analysis and interpretation of such data will allow us to resolve the two- and three-dimensional structure of regions containing partial melt and melt lenses within the crust or at the crust-mantle boundary. Our study will thus provide elementary information on where and how fluids, magma and heat is transported from mantle to the seafloor and spreading axis.

The compliance station is developed in period 1 of the project. The field experiment is planned within the funding period requested here. A ship time proposal has already been submitted.