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On/offshore deep electrical conductivity structure to investigate the Walvis Ridge magmatism and its interaction with the Kaoko Mobile Belt in northern Namibia (ELCONA)

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In October and November 2011, the Kaoko Belt in Northern Namibia was subject of magnetotelluric (MT) investigations within the interdisciplinary SAMPLE project (South Atlantic Margin Processes and Links with onshore Evolution). The Kaoko mobile belt was formed in the Neoproterozoic during the Pan-African orogeny and West Gondwana amalgamation and is characterized by transpressional sinistral deformation and NNW striking shear zones. The remote area offers ideal conditions to study key questions related to the breakup of Gondwana in the Mesozoic, the opening of the South Atlantic and the evolution of the continental passive margin.
The magnetotelluric onshore data were acquired at 167 sites in a $\sim$140 km wide and $\sim$260 km long corridor, from the Atlantic Ocean onto the Congo Craton. The magnetotelluric and vertical magnetic transfer functions are generally of excellent quality but indicate significant three-dimensional structures in the crust and upper mantle.
The onshore study is extended offshore with measurements along 2 transects parallel and perpendicular to the Walvis Ridge - an approximately 3400 km long seamount volcanic chain, trending NE-SW, from Africa to the Middle Atlantic Ridge, thought to be a product of the volcanic activity of the Tristan de Cunha Plume. We show data examples from on- and offshore MT sites and present preliminary 2D inversion results from sub-sections of the entire data set.