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# Electrical conductivity images across the Namibian passive margin: Implications for tectonic processes along the Kaoko Belt, the western Kongo Craton and the Walvis Ridge

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The Special Priority Programme SAMPLE of the German Science Foundation DFG is focussed on investigating processes related to the breakup of supercontinent Gondwana and the post breakup evolution of the passive continental margins of Africa and South America. Within this framework an amphibian magnetotelluric (MT) experiment was conducted at the Southern African passive continental margin, starting at the Walvis Ridge in the Atlantic Ocean and crossing onshore the entire Kaoko Belt and the western boundary of the Kongo Craton in Northern Namibia. High-quality MT data at 167 onshore and xx offshore sites show a strong variability within short distances and indicate complex subsurface structures in parts of the Kaoko Belt and along some of the major thrust and fault zones.
To identify the main conductivity features and resolve their properties in more spatial detail we started our modelling procedure with 2D inversion for a sub-set of the data where the 3D effects are less dominant along the amphibian profile. However, to account for 3D effects in the MT data and to assess robustness of conductivity anomalies revealed in the 2D model we used the entire data set for the 3D inversion using ModEM.
2D and 3D inversion models show zones of high electrical conductivity that correlate with surface expressions of prominent faults such as the Purros Mylonite Zone and the Three Palm Mylonite Zone of the Kaoko Belt. Outcropping Etendeka flood basalts in the Western Kaoko Zones are imaged by 10-15km deep reaching zones of high resistivity. Additionally, the inversion models reveal a spatial correlation of resistive zones with the cratonic Northern Platform; however, the geologically defined onset of the Kongo Craton appears as an area of high conductivity. Compared with other craton boundaries in Southern Africa this is very untypical.