



First results of MT studies at the Northern Swiss heat flow anomaly

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The North of Switzerland hosts a prominent heat flow anomaly, where the observed surface heat flux exceeds the Swiss average by a factor of two. The anomaly is situated within the permo-carboniferous trough and one hypothesis about its origin is that geothermal fluids migrate upwards along permeable pathways, carrying heat from the crystalline basement into shallower layers.

We will present first results of a magnetotelluric (MT) survey covering the extent of the anomaly over the permo-carboniferous trough.

The aim of the field measurements is to recover a 3-D resistivity model in order to gain insight into the geometry of the permo-carboniferous trough and permeable structures within it and the crystalline basement. The results would provide important information about the nature and origin of the observed heat flow anomaly.

It is known that MT in Switzerland can be challenging due to noise problems that arise from power-lines and local infrastructure. We will test different processing methods using multiple remote reference sites and discuss the feasibility of natural source electromagnetic measurements in this region. Besides the impedance tensor, which is the standard MT response, we estimate and evaluate the quality of recently introduced inter-site phase tensors, which are free of galvanic distortion effects such as static shifts.