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# Magnetotelluric data analysis from the continental collision zone in the Pamir and Tien Shan, Central Asia

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A magnetotelluric (MT) dataset was obtained within the multi-disciplinary Tien Shan – Pamir Geodynamic Program (TIPAGE) along a 340 km long profile from Osh in Kyrgyzstan via Murghab, Sarytash, the Kyrgyz-Tajik border, Karakul and Murghab to Zorkul in southern Tajikistan. It probes one of the deepest active intra-continental subduction zones on Earth and will help to establish how the highest strain over the shortest distance that is manifested in the India–Asia collision is accommodated structurally. In total there are 178 MT stations, whereof 26 combine long-period (LMT) and broad band (BB) recordings, with a frequency range of $10^{-4}$ - $10^{-1}$ Hz and $10^{-3}$ - $10^{3}$ Hz, respectively. A typical spacing was approximately 2 km between BB-only sites and 14 km for the combined BB and LMT sites.

We present and discuss preliminary 2D and 3D modelling results. The geoelectric strike directions are consistent with the predominant geological strike, roughly in E-W directions. A dimensionality evaluation of the data reveals the influence of off-profile features. Taking into account the profile geometry we attempt a combination of 2D and 3D inversion techniques. Robust subsurface resistivity features are a generally resistive upper crust in the Pamir region and several zones of high conductivity at lower crustal levels, particularly below the Pamir plateau. Zones of high electrical conductivity often imply the presence of fluids and may represent mechanically weaker areas which can absorb accommodated strain. The observed resistivity values and the depth range are similar to conductors below the Tibetan plateau which were interpreted as zones of lower crustal flow.