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Along the strike magnetotelluric profile to map electrical structure of Radhanpur-Ajmer transect in Rajasthan, India.



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The impression of low velocity zone in the north-western part of India imbibes the necessity of experimenting the study area with a different approach. To map the electrical structure of Radhanpur-Ajmer transect, is the primary objective of this work. The not so normal experiment was planned and conducted along the strike for the first time. Also this is the first reporting of magnetotelluric data along the profile in the area. After a rigorous analysis, the electrical structure of the profile is modeled in this area. We covered 16 stations and an additional station, with a 4-5 days recording at every station. The data quality is quite good at all the stations. To the northern end of the profile, geologically there are intrusions of Sendri-Amboji granite and gneissic rocks. There is an indication of batholithic type structure in the conductivity section as well. After covering half of the profile, the high resistivity column from depth to surface supports presence of major rocks intruded by Malani plutonic suit and it is suspected that this high resistivity column might indicate the plutonic intrusions in this region. The tail-end stations are mostly represented by Alluvium and windblown sand deposits. The low resistivity up to 115 ohm - m, in this zone is representative of this consolidated sedimentary pile. However, the breaks in resistivity at depth of 15km may indicate a fault boundary which also has disturbed the resistivity contours in high resistivity column between Sirohi and Mount Abu. The hotspot trail has been reported to pass through the same. The electrical structure has come out with good indicators of the suspect of the plume tectonics. The low resistivity kink to the north of Sirohi, indicates the location of Banas Dislocation Zone. Our first set of results reveals the good possibility of relating them with new-tectonic activity.

