

## Lithospheric electrical image of the Deccan Volcanic Province of western India from magnetotelluric studies

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The Deccan Volcanic Province (DVP), considered to be one of the largest igneous provinces in the world has been a region of interest for different geoscientific studies. Geophysical imaging of deep subsurface would be of interest to understand the nature and structure of the Lithospheric region covered by this vast basalt province. The results of MT studies carried out along two 330 km long NE-SW trending traverses across the DVP are presented here. The results based on the 2D MT model obtained along this traverse together with those from other MT traverses in this area are examined and integrated with other available geophysical modeling results particularly from Deep Seismic, 3D teleseismic tomography and heat flow studies. The deep geoelectric section as deduced from MT models point out to a two layered lithospheric mantle structure with an upper very high resistive layer (several thousands of Ohm.m) and a bottom relatively conductive one (a few tens of Ohm.m to a few hundred Ohm.m). The lithospheric electrical structure is inferred to be linked to compositional changes associated with a depleted lithospheric upper mantle in the Dharwar craton. An impressive feature that the study has brought out is the presence of a well defined lithospheric upper mantle conductor in the depth range of 80-120 km limited to the middle segment of the MT traverse from Sangole (in the SW end) to Partur (in the NE end) over the DVP. This upper mantle conductor could be related to the postulated subduction of the western Dharwar craton underneath the eastern Dharwar craton. However, more MT and seismic coverage is required to address such a possibility. The electrical characterization of the region including the presence of upper mantle conductor shows close similarities with that of other similar cratonic regions like the Slave and Superior Cratons in northwestern Canada.