

EVOLVING 3D LITHOSPHERIC RESISTIVITY MODELS ACROSS SOUTHERN AUSTRALIA DERIVED FROM AUSLAMP MT

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The Australian Lithospheric Architecture Magnetotelluric program (AusLAMP) is a continent-wide deployment of long-period (10-10000 s) MT instruments roughly every 50 km to map the electrical resistivity structure of the Australian continental lithosphere. The coverage of sites in South Australia is nearing completion with large funding from SA's Pace initiatives and in collaboration with the University of Adelaide and Geoscience Australia (across the Maralinga-Tjarutja Lands). We present the latest 3D resistivity models of the state across the southern 2/3 of South Australia. The area covers the Archean-Proterozoic Gawler craton, and its western and eastern margins, extending across to the east and covering the Flinders Ranges and Curnamona Province. The central Gawler Craton is imaged as a resistive zone with conductive margins surrounding the core of the cratonic block. Contrary to seismic tomography models, showing a fairly homogeneous and fast velocity structure, the Curnamona Province shows a highly heterogeneous resistivity distribution with low resistivity zones in the crust beneath the Province. Currently, the AusLAMP grid in South Australia is expanding across the NE of the state in the Cooper Basin and the Simpson Desert, an area that has not been covered by any deep-probing geophysical techniques. We aim to also present preliminary results of this extension.

The results of the inversion of the AusLAMP data highlight the correlative significance with other geochemical data and points towards MT as a geophysical fertility vector for mineral discovery.