

# **USE OF GEOMAGNETIC DEPTH SOUNDING TO RECOVER MAGNETOTELLURIC IMPEDANCE TENSORS FROM INCOMPLETE ELECTROMAGNETIC TIME SERIES**

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To image the upper mantle transition zone using magnetotellurics, long period (about 50.000s) electromagnetic data are required. To obtain such data, requires a measurement campaign that lasts for about 3 months.

Occasionally, during such long campaigns, one encounters a situation where the magnetometer breaks down and fails to record one or all components of the magnetic field at one site, say A. To repeat the measurement, is not only expensive, but also time consuming. In this paper, we introduce a method for recovering the MT impedance tensor that makes use of Schmucker's perturbation tensor  $\mathbf{W}$ , of the geomagnetic depth sounding technique. Our technique involves substituting the magnetic field components from a nearby station B, which serves as a reference site, for the unavailable magnetic field components of site A.

Our approach is demonstrated with field data from Queensland-Australia. We investigate the conditions under which the technique yields acceptable results.

Magnetotellurics Transfer Funktion , Schmucker's perturbation tensor

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