DEPTH ESTIMATE OF A REMNANTLY MAGNETISED SOURCE USING MULTI-LEVEL MAGNETIC DATA

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The depth to the top of a remanently magnetised source near Teetulpa in South Australia is estimated using multi-level (airborne & ground) magnetic data.

Remanently magnetised sources are considered challenging to interpret, mainly because the shape of the anomalism is a product of both the dip of the source and the magnetisation vector, with the two indistinguishable if both are unknown.

It is shown here that by interpreting the source geometry, in this case a sub-vertical pipe, the appropriate formula to calculate the magnetic response can be integrated with respect to z (vertical separation of source and sensor) irrespective of the dip or magnetisation vector, and when data exists at multiple z levels the z values can be estimated by solving a system of linear equations.