

Optimising AEM technology for salinity applications

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In seeking to apply AEM data to salinity problems it is important to understand that the requirements are substantially different from that of mineral exploration. Given its exploration history, it's perhaps not surprising that currently available technology could be considerably improved for salinity applications. This paper suggests how we could change the way we acquire, process and interpret AEM data to improve its usefulness in a number of key areas.

Improved conductivity discrimination in the top 10 m

This will only be obtained by improving the high frequency fidelity, reducing survey altitude, and increasing the geometric stability of our existing systems. There is much that can be done in this area and some systems are getting close to the required specifications.

More accurate, constrained inversion strategies to estimate the true the regolith conductivity profile

We need new inversion strategies that can take advantage of the improved quality data and make use of constraints that are available from other data sets and models of groundwater processes.

New ways of using AEM that will reduce the total cost

When AEM is acquired in the same way as mineral exploration surveys it is just too expensive to find wide application for salinity applications. On the other hand many salinity applications do not require this very high sampling density. We need new ways of designing surveys that only acquire AEM data where it is needed to complement other information and to establish the conductivity structure in critical areas. This may mean flying widely spaced lines or even single flight lines to establish the conductivity profile in critical areas. The paper will review these challenges and recommend strategies for improving our performance.