Dryland salinity hazard assessment, Central-West New South Wales, Australia

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Loss of productive agricultural land through dryland salinisation is a critical issue in Australia. Traditional investigation of salinity has relied on geological and groundwater data obtained by airphoto interpretation and drilling. This methodology is costly and time consuming. New approaches are required to speed up the process of investigation to assess the salinity risk, and input into land management decision making at farm and catchment scales.

This study integrates hydrological datasets, high resolution airborne geophysical mapping techniques, and regolith and bedrock geological mapping methods (from magnetics, and information obtained from drilling). Airborne geophysical mapping techniques (principally electromagnetics, magnetics and radiometrics), provide information on the distribution of conductive ground (potential salt stores) and the nature and variability of regolith at depth.

Particular attention has been paid to mapping the distribution of *parna* (aeolian deposits reworked by colluvial processes), which forms a significant component of the regolith developed in the Central West of NSW. It blankets parts of the contemporary landscape and in places forms surficial deposits in excess of 8 m thick. Studies suggest that parna constitutes a significant source and sometimes, store of soluble salts. Its role in controlling the dynamics of the salt in the Murrumbidgee River catchment is assessed.

When combined with an understanding of landscape evolution, these integrated datasets enable the identification of flow paths for groundwater systems, and construction of dryland salinity hazard assessment maps. These data have potential to assist salinity investigators and catchment managers in the development of timely and efficient land care strategies.