

Restoring the balance

P5

Providing information for evaluating actual or potential plant-based systems for management of dryland salinity.

PEOPLE, LAND AND WATER

SP9 Spatial analysis of land and water

Spatial diagnostic tools to aid deployment of perennial systems

This project aims to develop and deliver diagnostic tools and rules for interpreting geophysical and remotely sensed data for mapping soils and land cover at a catchment scale.

The outcome will be higher resolution soil maps than have been available and improved modelling of water balance in catchments to assist the CRC, as well as soil conservation and catchment management organisations, to make decisions about appropriate locations for perennial plantings for recharge and salinity management.



CRC FOR
PLANT-BASED
MANAGEMENT
OF DRYLAND
SALINITY

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Diagnostic tools and rules for interpreting geophysical and remotely sensed data

The project focus is on providing spatial information to aid in decisions about where to intervene most profitably and successfully in the landscape with new perennial systems.

This requires identification of consistently poorly performing land, limiting conditions for a particular perennial (such as soil depth or profile constraints to root growth) and identification of the area required for the perennial system to achieve a positive outcome for rechargereduction and salinity control.



Airborne and satellite imagery and airborne geophysical data will be evaluated and relationships developed between the remotely sensed data and field measurements of soil characteristics. These relationships will allow higher resolution mapping of soils and of some subsurface soil properties for which little information is available from conventional surveys.

The project's outcomes will aid local land management decisions and provide information on the distribution of key variables as inputs to spatial modelling of plant growth and hydrology in catchments.

The research challenge

Although some geophysical and remote sensing mapping products are available at farm scale, the link to land use planning is poorly developed and managers do not always have a clear understanding of how they can be used for making decisions about planting locations.

This project will correlate information collected using airborne geophysical and other remote sensing data with field data to enhance soil mapping at property and catchment scales.

How research will be done

Data will be collected and analysed for sites in southern Western Australia, Victoria, and the Angas-Bremer catchment in South Australia.

High resolution remote sensing imagery, geophysical and topo-climatological data will be acquired and field data collected. Methodologies will then be developed for mapping and interpretation of key terrain, soil and cover variables.

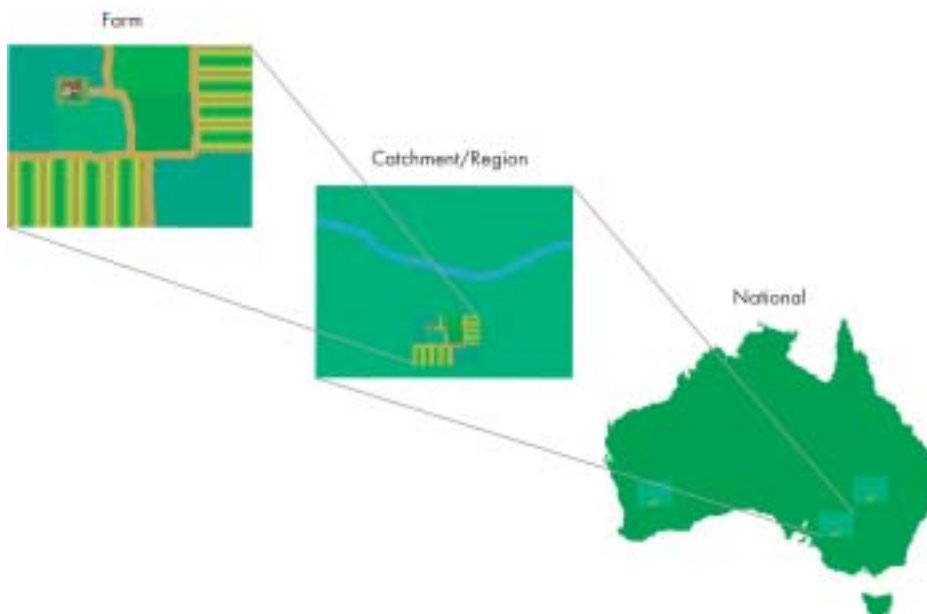
The project will:

- recommend and demonstrate methodologies for using remote sensing and geophysical data to enhance soil mapping at property and catchment scales
- provide maps of key cover and soil characteristics as inputs to catchment scale hydrological models being developed by the CRC
- improve estimations of water use and recharge and better guide optimal location of perennial plantings.

An interpretive manual for farm-scale radiometric mapping (WA) and soil mapping using remote sensing and geophysical technologies (SA) will provide guidelines for the interpretation and analysis of remotely sensed data for mapping soils.

Short courses will educate users in application of interpretative products.

Scales of study



KEY RESEARCHERS

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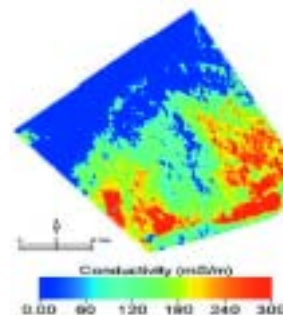
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Benefits from this research

The project will provide higher resolution soil maps than have been available to date, improve modelling of water balance in catchments and help the CRC and catchment and land managers to make decisions about appropriate locations for perennial plantings for recharge and salinity management.

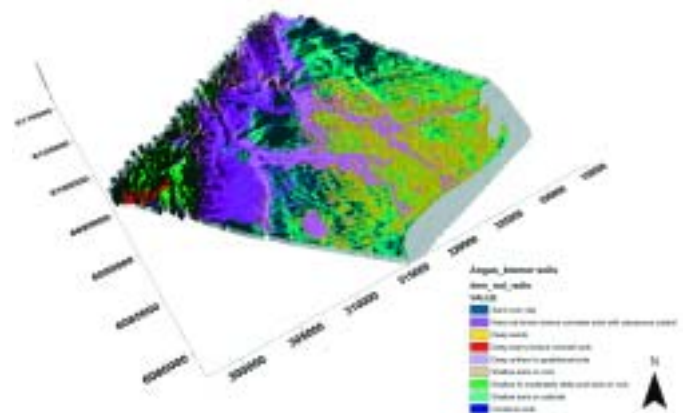
The methodologies developed will be presented in a manual for acquiring, interpreting and analysing the imagery and geophysical data to establish the soil properties required for plant performance and recharge assessment.

Linkages with related CRC projects

This project links with other projects being conducted in the CRC's subprogram 9:

- Identifying the impact of CRC programs and potential recharge reduction through analysis of regional spatial databases and plant growth models.
- Development of hydrological models for estimation of water use and recharge at a catchment scale.

Collaborative linkages have also been established with the CRC Landscape Environments & Mineral Exploration. (CRC LEME)



To find out more about Spatial diagnostic tools to aid deployment of perennial systems contact:

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CRC PROGRAM 5

People, Land and Water

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CRC PROGRAM 9

Spatial analysis of land and water

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