

## Introduction

The Darling Downs region of south-east Queensland in the headwaters of the Murray Darling Basin, is characterised by highly fertile soils and a long history of agricultural development. In recent years the region has experienced significant change in land use activities. This project seeks to examine patterns of land use change (including remnant vegetation) in the Downs over a 25 year period.

The goal of this research is to develop a multidisciplinary approach to land use assessment that integrates:

- mapped land use changes (GIS)
- the condition of remaining native vegetation
- the contribution of economic and policy 'drivers' to observed changes

## Methods

The 1540 km<sup>2</sup> study area in south east Queensland (Fig. 1) covers range of land uses.

Digital (Landsat MSS, TM & ETM+) satellite images (1975, 1981, 1985, 1991, 1997 & 2001) were classified and linked to other digital thematic maps (incl. DEM & DCDB) using ArcView 3.2 (Box 1). A spatial data base of land use from 1975 to 2001 has been derived from the imagery.

Socio-economic and agricultural commodity statistics since 1950 were collated and an ecological assessment of remnant vegetation conducted.

Figure 1: North eastern Murray-Darling Basin showing location of study area

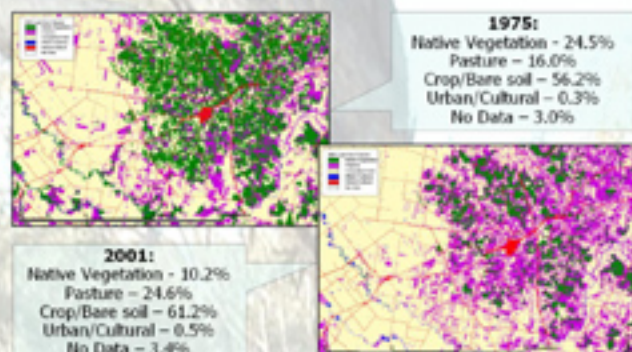


## Results so far ...

Preliminary analysis of the data suggests:

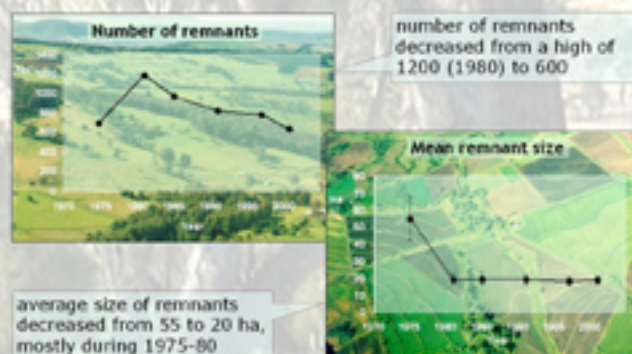
- 60% overall reduction in native vegetation since 1975
- 50% overall increase in pasture land

Figure 2: Cumulative change in land use in study area, 1975-2001

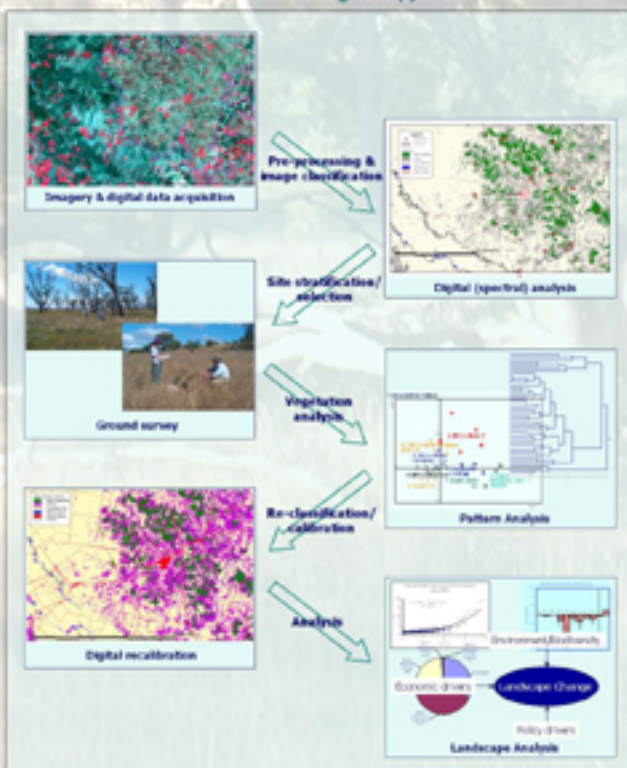


- 84% of pasture land was converted to cropping
- 15% of pasture reverted back to 'vegetation'
- 85% of previously cropped land changed to pasture land
- 61% of native vegetation was converted to pasture land
- 38% of native vegetation was converted to cropping

Figure 3: Change in the number and mean size of native vegetation remnants in the study area, 1975-2001



### Box 1. Methodological Approach



Landscape patterns in the study area are highly heterogeneous and complex, with much of the fragmentation and reduction of remnant vegetation occurring between 1975 and 1980, but continuing to the present. Land systems within the study area are dynamic with significant change between land use types observed over the 25 year period.

## Next step ...

The project is currently at the re-classification and calibration stage (Box 1), a detailed landscape analysis will shortly follow that will examine such attributes as:

- patterns of remnant fragmentation (and adjoining land uses) over time
- biodiversity and ecological condition of remnants with different fragmentation histories
- options for biodiversity management through:
  - catchment-scale biodiversity monitoring/reporting
  - biodiversity planning integrated into regional NRM

### Acknowledgements

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