# Earth Observations in Statistics

## Collaboration with Geoscience Australia

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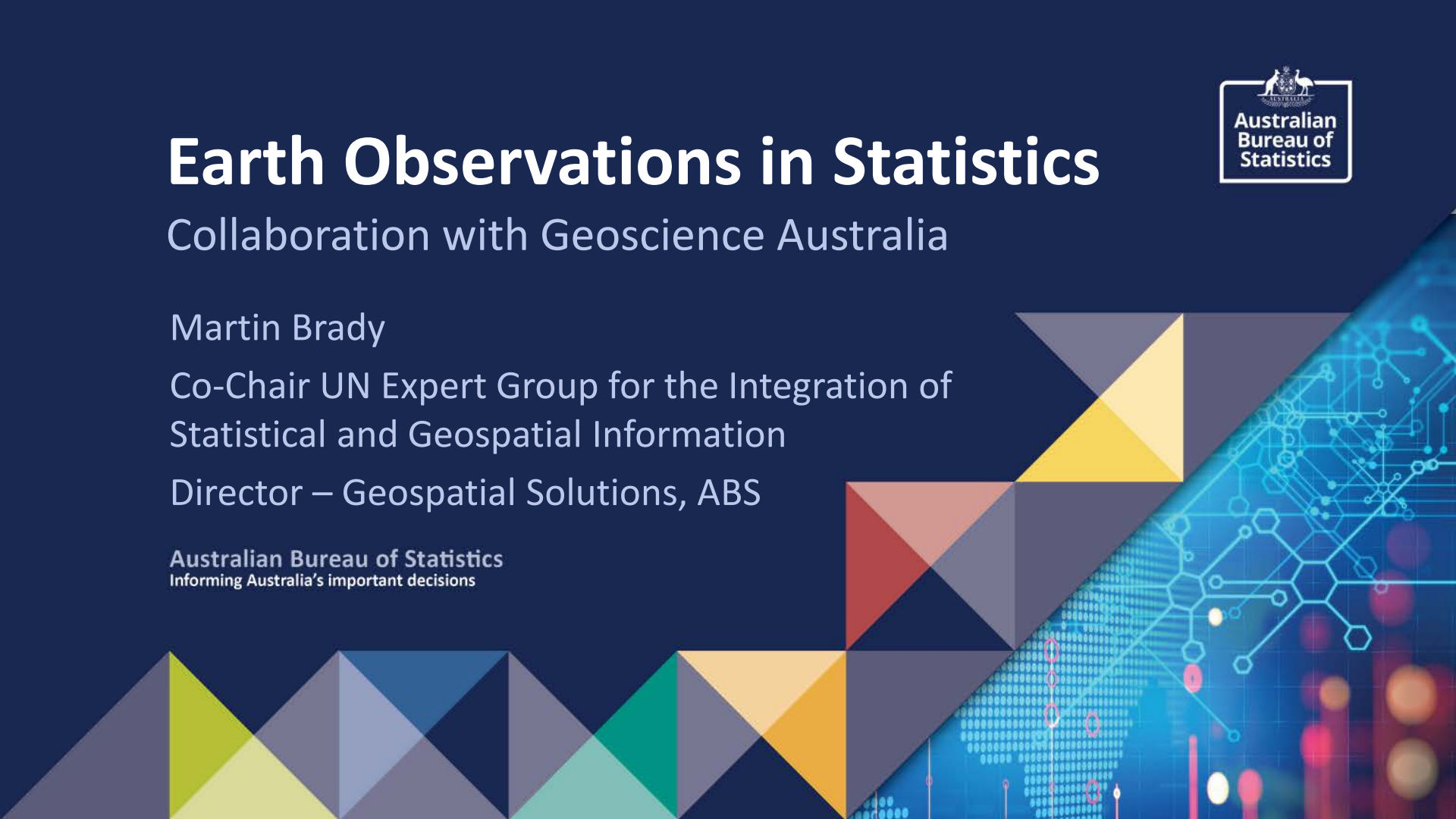
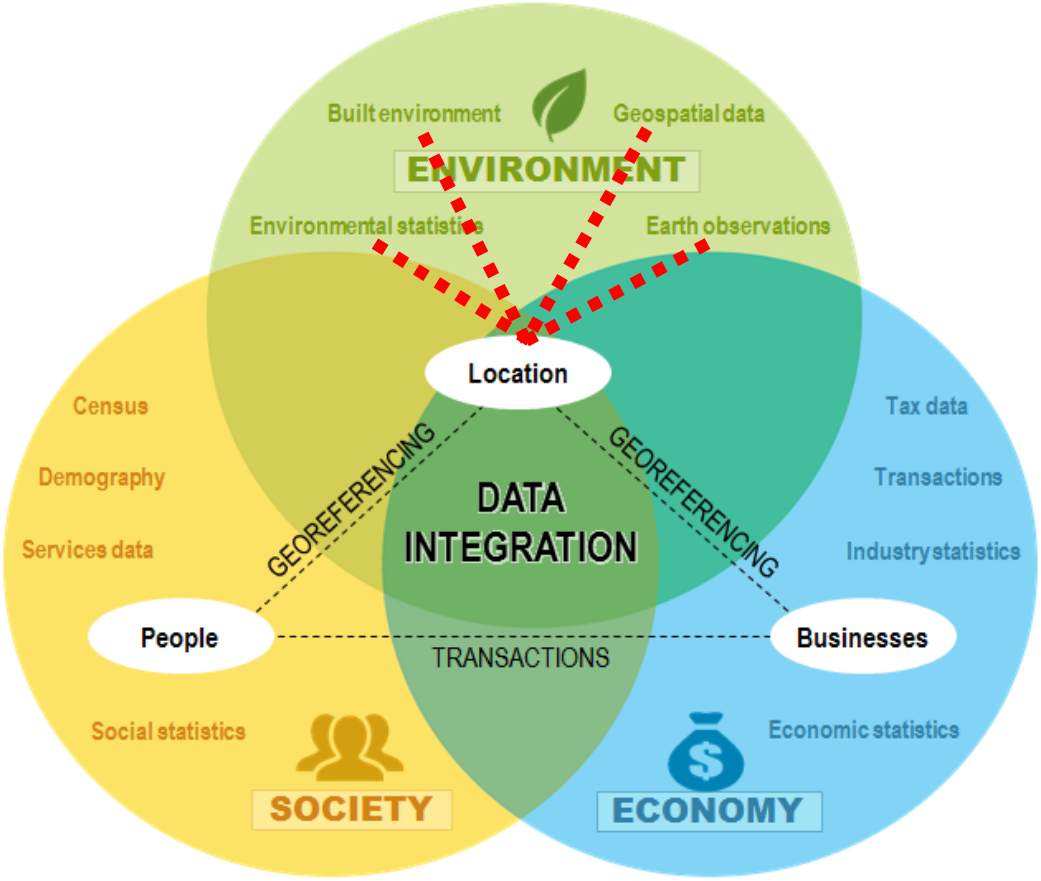
Director – Geospatial Solutions, ABS

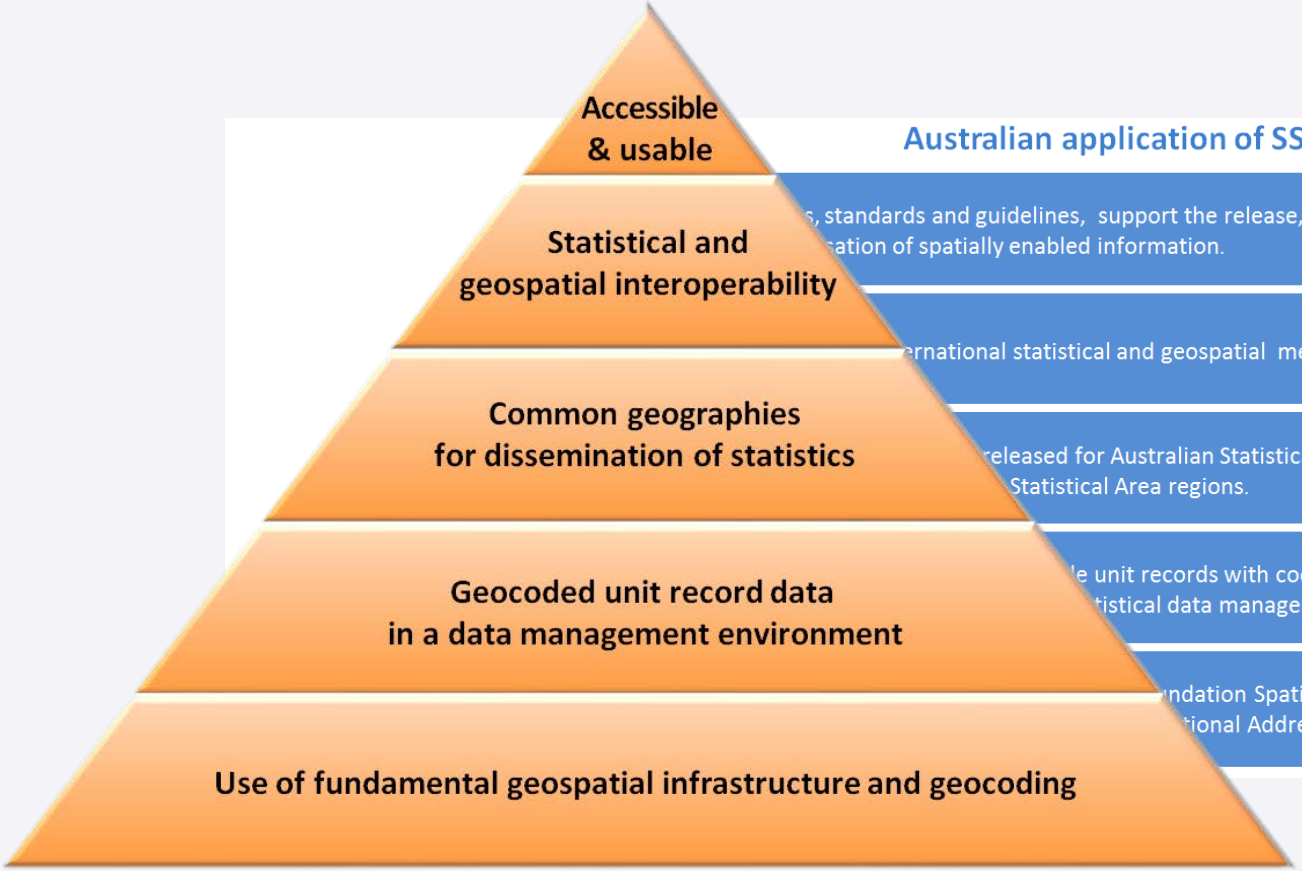
Australian Bureau of Statistics
Informing Australia's important decisions



# Data integration and new data sources



# Spatial Enabled data for statistical integration

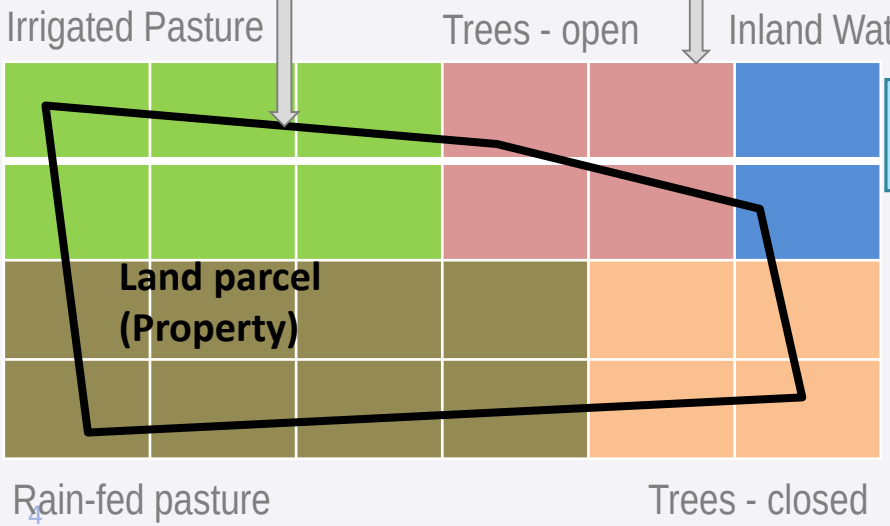


# Land Accounts – statistics from geospatial

## Geospatial Input

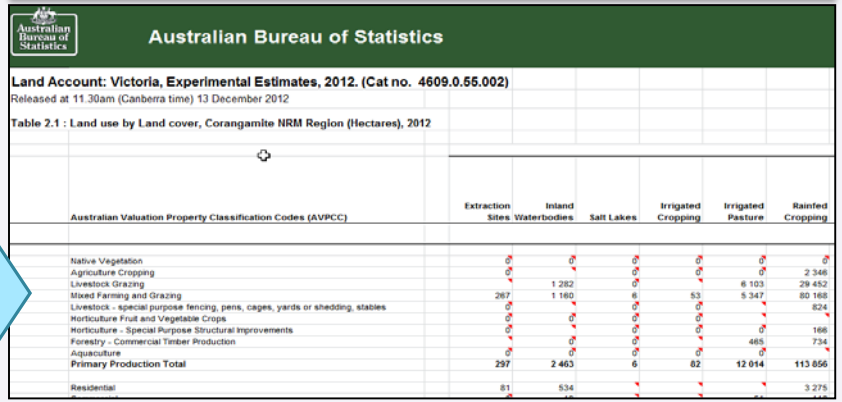
State Valuations:
- Land use
- Land value

Geoscience Australia's Dynamic Land Cover grid




## Statistical Output

Detailed Land Account tables:
Land cover by land use, area and value



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Land Account: Victoria, Experimental Estimates, 2012. (Cat no. 4609.0.55.002)
Released at 11.30am (Canberra time) 13 December 2012

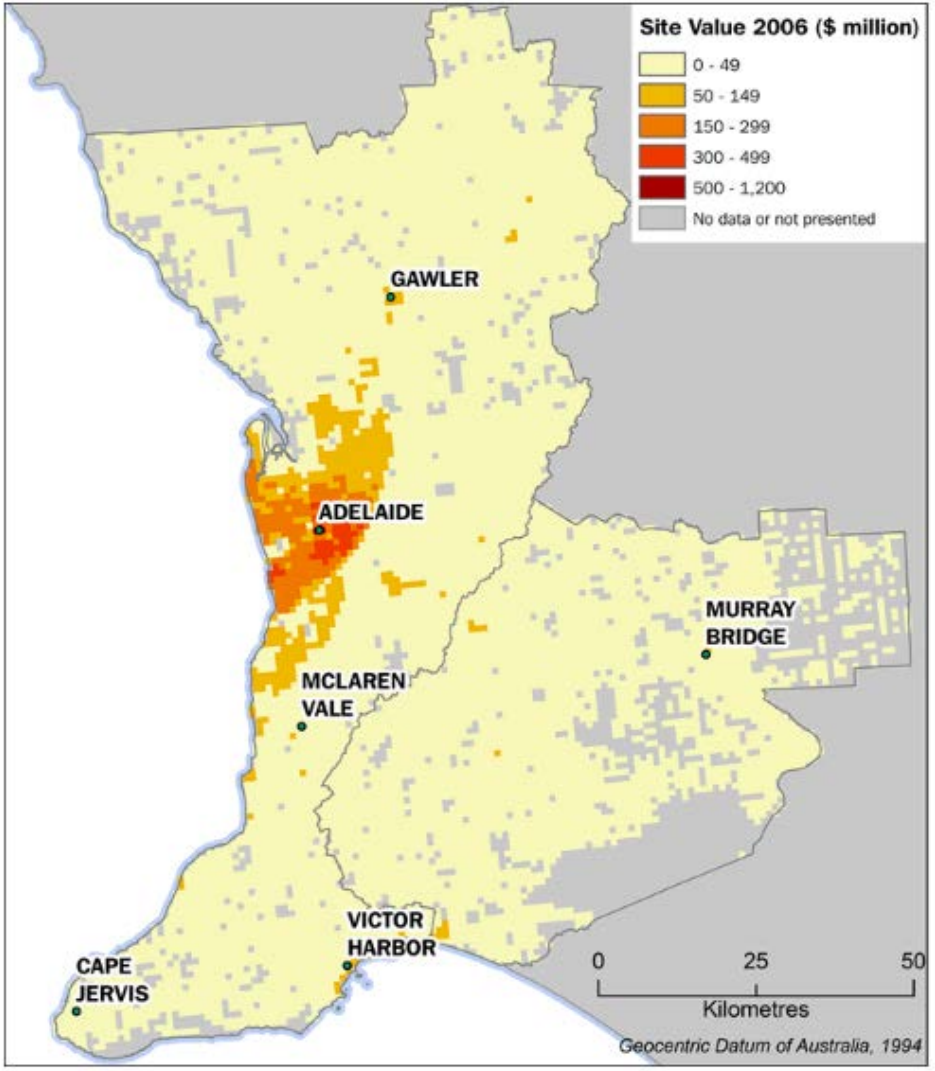
Table 2.1 : Land use by Land cover, Corangamite NRM Region (Hectares), 2012

| Australian Valuation Property Classification Codes (AVPCC) | Extraction Sites | Inland Waterbodies | Salt Lakes | Irrigated Cropping | Irrigated Pasture | Rainfed Cropping |
|---|---|---|---|---|---|---|
| Native Vegetation | c | c | c | c | c | c |
| Agriculture Cropping | c | r | c | c | c | 2 346 |
| Livestock Grazing | r | 1 282 | c | r | 6 103 | 29 452 |
| Mixed Farming and Grazing | 267 | 1 160 | 6 | 53 | 5 347 | 80 168 |
| Livestock - special purpose fencing, pens, cages, yards or shedding, stables | c | r | c | c | r | 824 |
| Horticulture Fruit and Vegetable Crops | c | c | c | c | r | r |
| Horticulture - Special Purpose Structural Improvements | c | r | c | c | c | 166 |
| Forestry - Commercial Timber Production | r | c | c | r | 485 | 734 |
| Aquaculture | c | c | c | c | c | r |
| **Primary Production Total** | 297 | 2 463 | 6 | 82 | 12 014 | 113 856 |
| Residential | 81 | 534 | r | r | r | 3 275 |

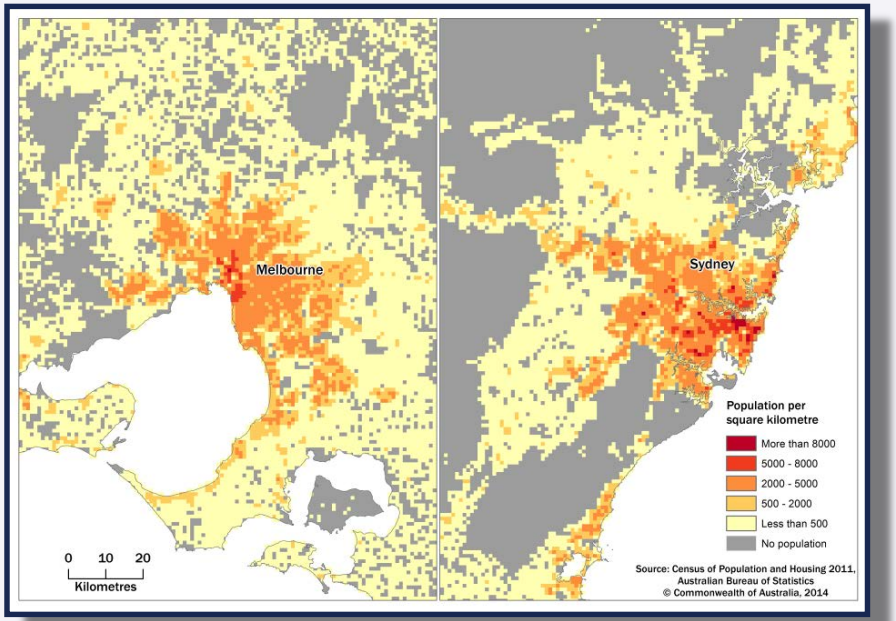
**Small area land account summary data:**
- Land value
- Land use
- Land cover
- Cadastral change

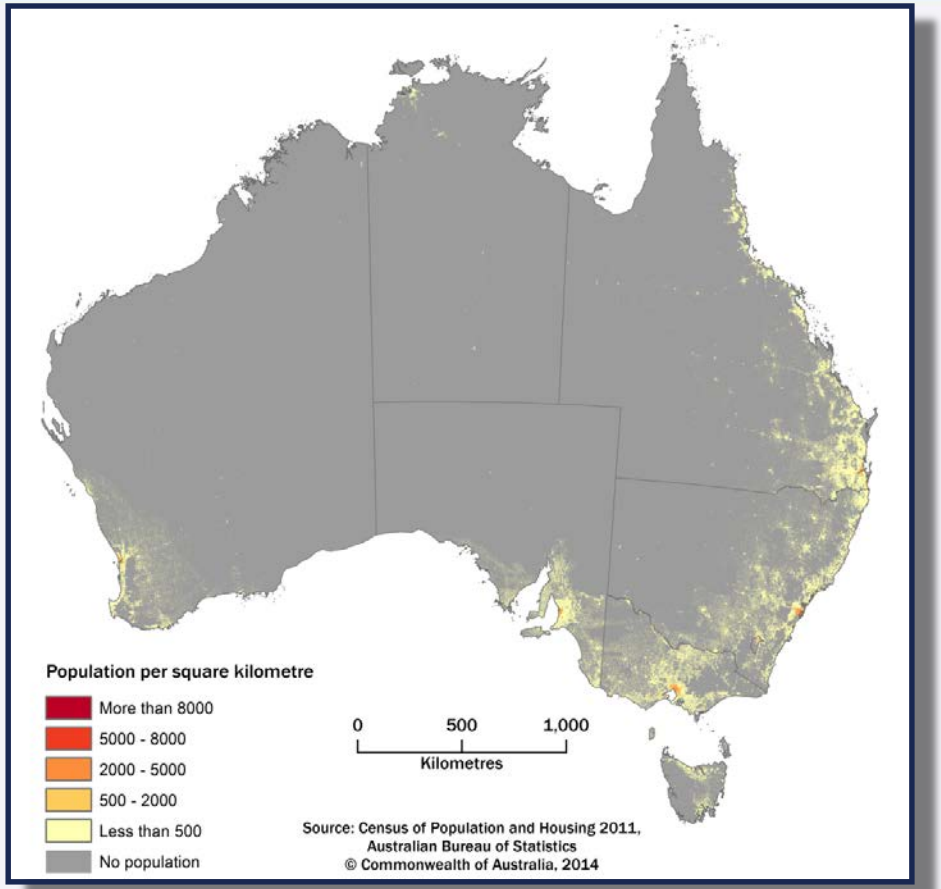
**Integrated with other small area data:**
+ Population
+ Building approvals

# Grid of administrative land value data



# Population grid – geospatial from statistics



# ABS-GA Fractional Cover Collaboration

Australian Bureau of Statistics

## Aim

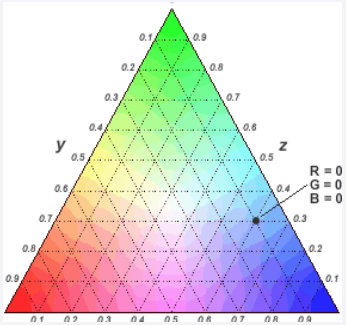
- Demonstrate the utility of Landsat imagery held in Digital Earth Australia (DEA) for producing statistics

## Key objectives

- Build on existing collaboration between the ABS and GA
- Explore statistical uses of EO data on DEA and the National Computational Infrastructure (NCI)
- Build the foundation for longer term projects

# The Fractional Cover data product

Green Vegetation

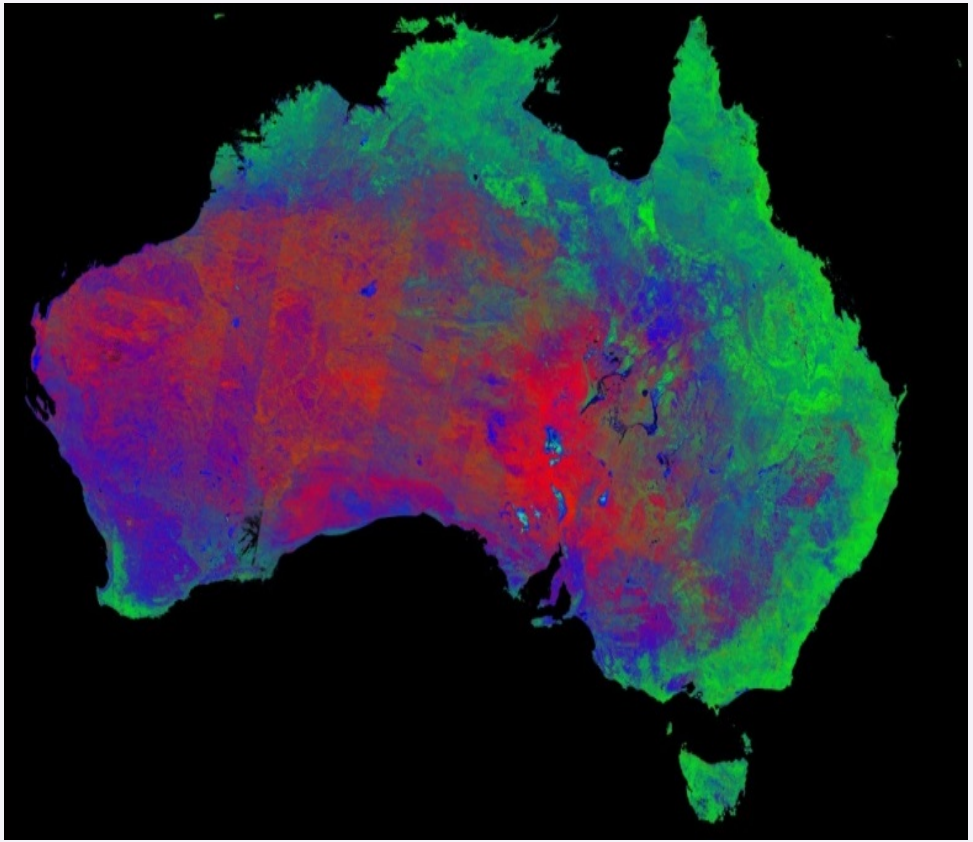



Bare Soil

Dry Vegetation

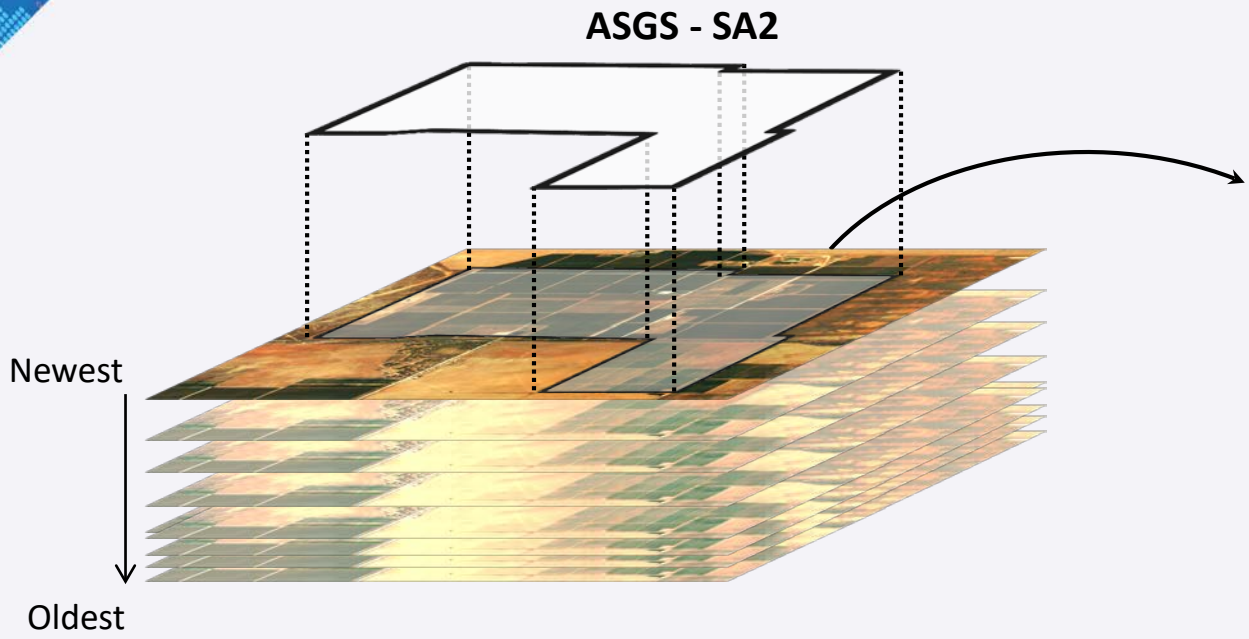
Built from Landsat Surface Reflectance Products (ARG25)

Captures cover dynamics at a 25m resolution



Graphics courtesy of Geoscience Australia

# Regional statistical summaries

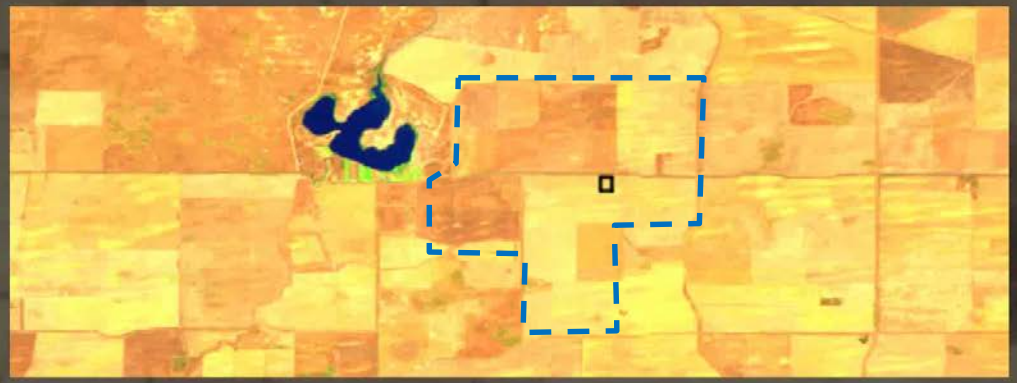



For each time-step:

| PERCENTAGE | CELL COUNT |
|---|---|
| 91 – 100 | XXXXX |
| 81 – 90 | XXX |
| 71 – 80 | XXXX |
| 61 – 70 | XX |
| 51 – 60 | XXX |
| 41 – 50 | XX |
| 31 – 40 | X |
| 21 – 30 | XXX |
| 11 – 20 | XXXX |
| 1 – 10 | XXX |

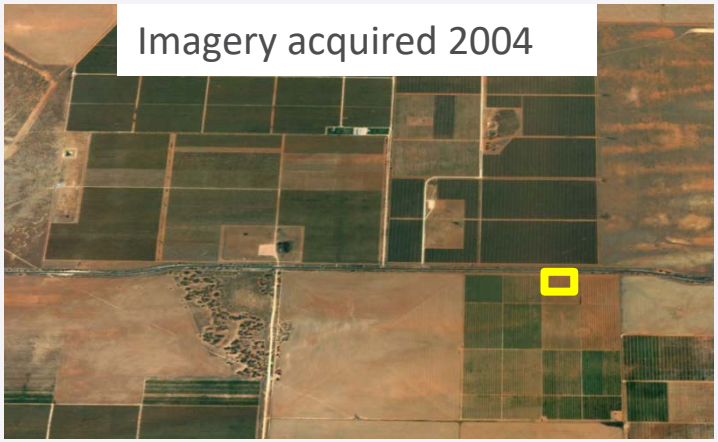
FOR ALL 2193 SA2’S IN AUSTRALIA

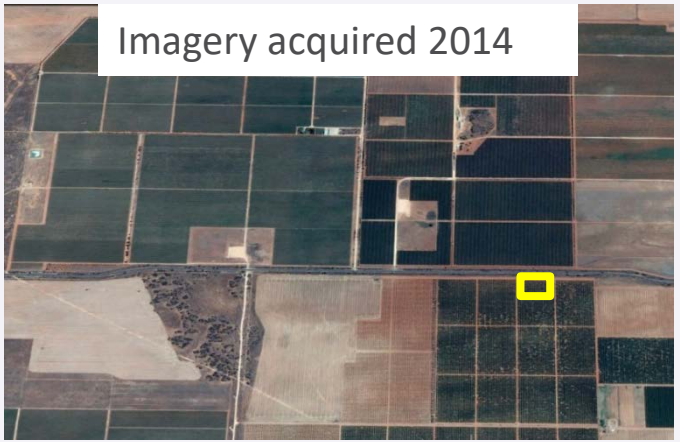
# What else can fractional cover and DEA tell us?

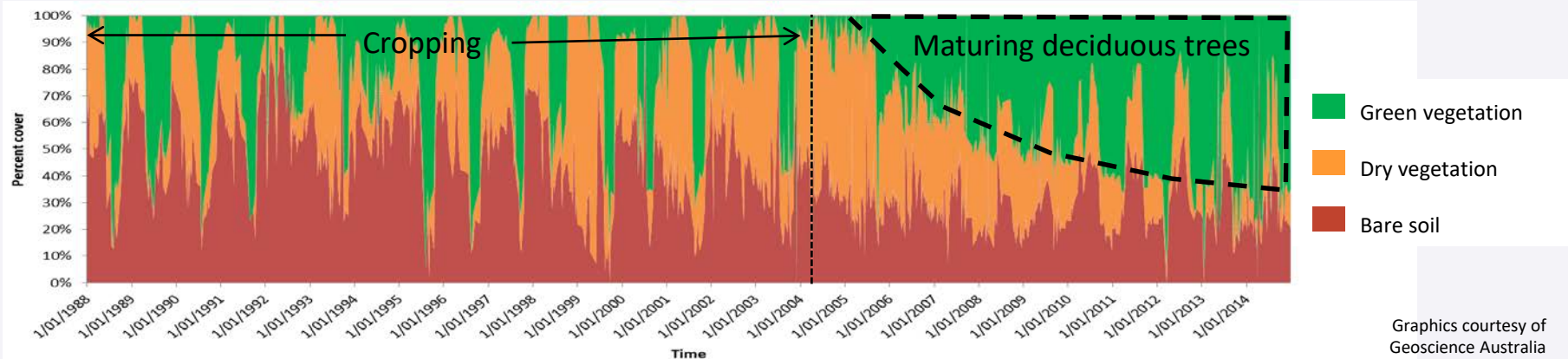



Graphics courtesy of Geoscience Australia

# Identifying change in the physical environment



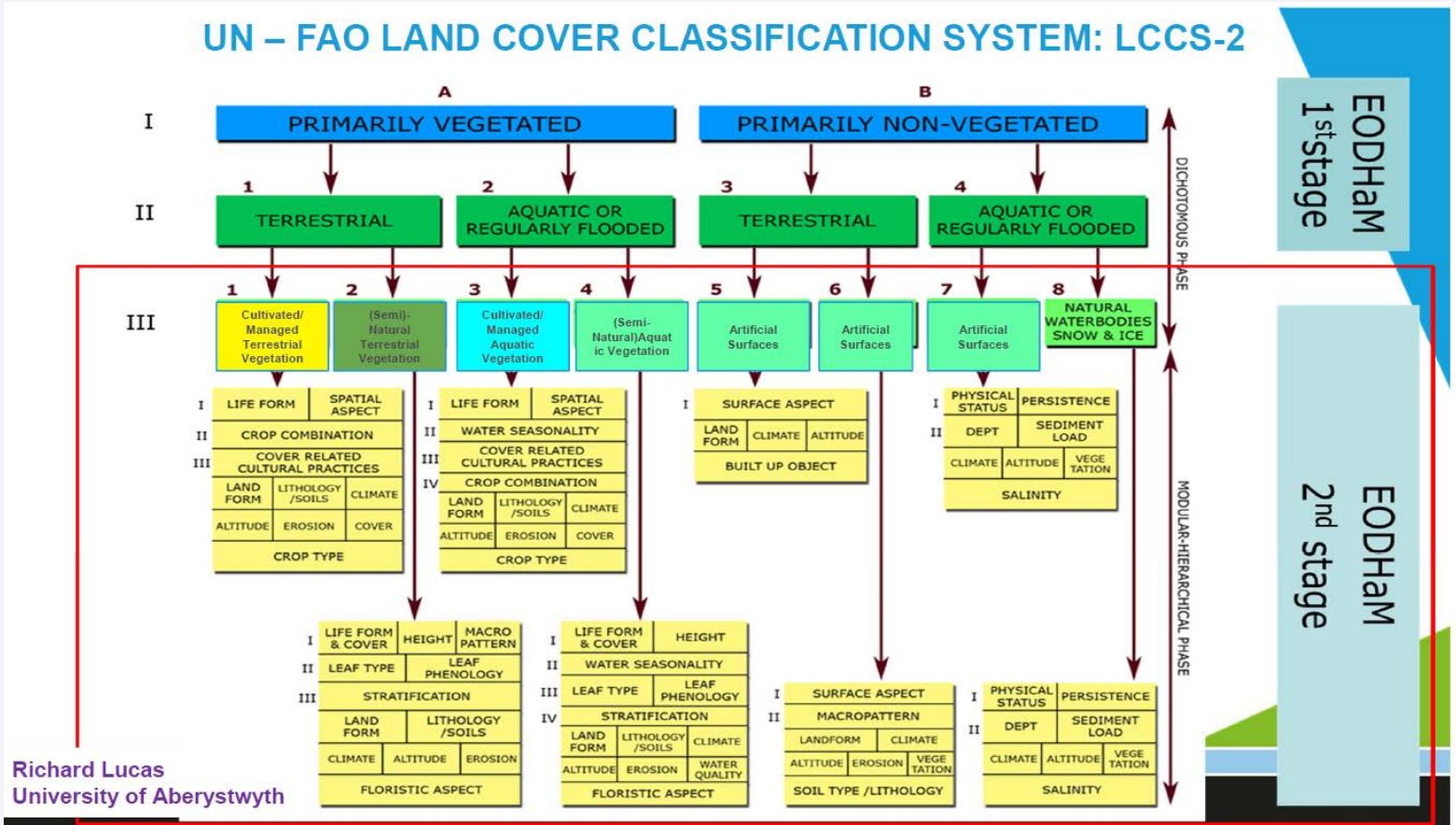




Graphics courtesy of Geoscience Australia

# Future areas for collaboration

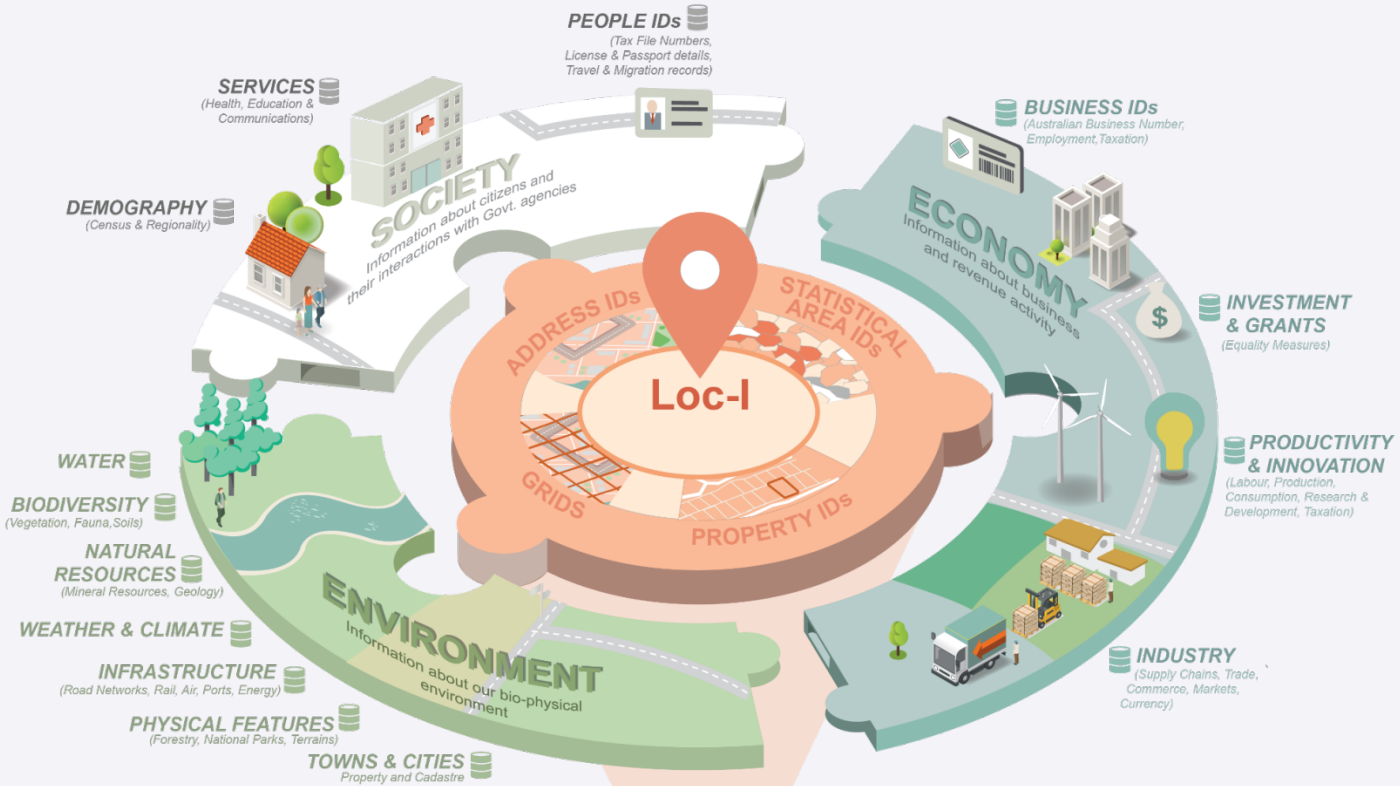
- New Land Cover product and Fractional Cover
  - National Environmental Economic Accounts
  - land management practices
  - ecosystem condition and preservation
- Urban change detection
  - address register and geographic areas maintenance
  - assuring construction activity data
  - measuring urban encroachment on farming and other land uses
- Agricultural production measures
  - irrigation
  - crop extent, types and health
  - soil condition

# New Land Cover Framework and dataset




Richard Lucas
University of Aberystwyth

# Data integration – spatial referencing and indexing



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# Questions?