



Agricultural Monitoring in Australia

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National Monitoring examples

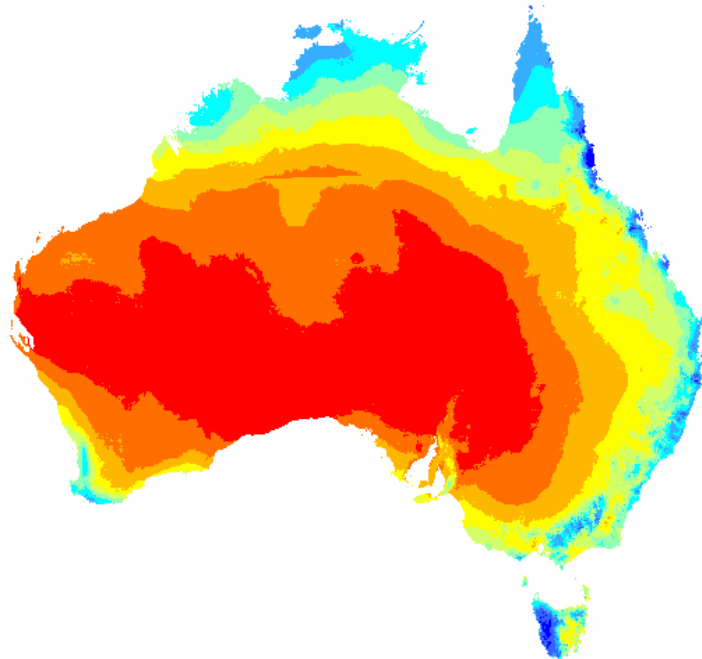
- **Fire hotspots**
- **Carbon accounting (land use, particularly forests)**
- **Number of National static datasets (land tenure, remnant veg, land use, soils)**
- **Historical & near real-time climate information (10km grid)**
- **Census statistical data**
- **Predominantly Government monitoring and research needs compared with private industry**

But

Many regional monitoring activities

Sub-National Monitoring – why not National ?

- **Diverse agro-climatic zones – tropical, sub-tropical, temperate, mediterranean**
- **Tailored information needs**
- **No clear business model (for provider and end-user)**
- **User requirements for quantitative products !**





Application – (1) Crop production

- **NDVI based**
- **Quantitative needs Link to yield mapping (*in situ*)**
- **Spatial resolution – within paddock**
 - Eg Spot, Ikonos, Quickbird, airborne
- **Temporal resolution – Few key images per year**
- **Largely strategic applications (eg fertilisers next year to manage within-paddock variation)**
- **Yield predictions – difficulty of integrating with models**

Recent ‘advances’

- **Some failed commercial ventures**
- **Inability to link to economic justification (what is value proposition for provider and end-user ?)**
- **Technology driven, not market driven**



Application – (2) Pasture/grassland production

- **NDVI based**
- **Quantitative needs How calibrate ?**
- **Spatial resolution – within paddock**
 - Eg Spot, Ikonos, Quickbird, MODIS
- **Temporal resolution – near real-time**
- **Largely tactical applications (eg stock management decisions)**
- **Quantitative needs how calibrate ?**
 - Growth rate – integrated with Climate information
 - Biomass – calibrated



Application – (2) Pasture/grassland production

Recent advances

- **“Pastures from Space”**
 - Near real-time (within 24 hours of overpass)
 - Quantitative
 - Growth rate – integrated with near real-time climate information (MODIS)
 - Biomass calibrated to kg/ha (Spot, Ikonos, Quickbird, MODIS)
 - Production, environmental, social uses



Application – (3) Forests, perennial/remnant vegetation

- **Mapping**
- **Spatial and temporal resolution – Low**

Recent 'advances'

- **National mapping of land use and other spatial data sets (eg soils)**
- **Often underpin other applications**



Application areas

Generic needs

- Integration with range of spatial and point data sets
- Calibration and Validation
- Suite of spatial and temporal resolutions to enable tailoring

Outcomes

- Production, environmental & social
- Tactical & strategic decision making
- Commercial and non-commercial
- Historical, real-time & predictive (with modeling)
- IT infrastructure, Web-delivery
- Other real-time data flows (eg sensor networks)

- **Quantitative products (user driven)**
- **Environmental accountability**
- **Biosecurity (early warning)**
- **Climate change – impact and adaptation**
- **Extreme events – monitoring and managing**
- **Whole of system !**
 - Mixed enterprises
 - Mixed outcomes (production, environmental, social)
- **New tools**
 - Hyperspectral
 - Radar



National capability for data collation, integration, analysis and synthesis

- Information and communication technologies (ICT)
- Data management and integration services
- Environmental genetics and genomics
- New technologies in real-time sensors, metering and telemetry
- Remote sensing and high resolution imagery