Australian Greenhouse Office
Key Project Areas

- Land Clearing
- Biomass Estimation
- Soil Carbon Estimation
- System Framework and Decision Support
Land Clearing Projects

- 4 pilots - 1st round
- 12 - 2nd round pilots
- scene identification
- Year 2000 mosaic
- 1972-1991
- 1992-2002
Scene Search/Purchase

2. Scene Search/Purchase

- 2000 - purchased and processed
Year 2000 Mosaic
Biomass Projects

- ‘grey’ literature
- wood densities
- carbon contents
- inventory data
- wood products
- estimation methods - multi-phase sample
- plant productivity
- destructive sample protocols
Biomass Method Selection

2. Method selection has involved extensive testing and review
   • testing highlighted problems in using typical forest ‘inventory’ data
   • multi-phase approaches on total mass provide a more reliable and progressively improvable approach
   • multi-phase can be founded on a productivity surface
   • demands for no. of ‘plots’ reduced dramatically using multi-phase techniques
1. Model Attributes

- Model - a 3PG derivative
- Predicting a relative index (long-term) of woody-biomass productivity
Productivity Surface Key Inputs

2. Key Inputs

- Temperature
- Rainfall
- Frost
- Vapour Pressure Deficit
- Soil (nutrient and moisture holding capacity)
- LAI
- Solar Radiation
Net Primary Productivity
3. Ancillary information is still needed

- wood density (Ilic et al. in press, NCAS TR no. 18)
- carbon content (Gifford 2000, NCAS TR no. 7 & 22)
- allometry/partitioning (Snowdon et al. in press, NCAS TR no. 17)
- forest type (National Veg. Info. System)
- disturbance (from remote sensing program)
- age and site index based growth (RWG II)
- biomass literature (Grierson et al. in press, NCAS TR no. 25)
Soil Carbon Projects

- soil/litter sample protocol
- analytic method corrections
- modelling
- plant inputs
- inventory and mapping
- soil pairs
- management practices
- afforestation soils
1. New Paired Sites and Enhanced Paired Site Data

- Approximately 80 new pairs in key systems
- Approximately 20 further pairs with enhanced data
2. Soil Sampling Protocols

- This task has been completed by CSIRO (Neil McKenzie / Phil Ryan) and approved by the Australian Collaborative Land Evaluation Program (ACLEP).

- Published as McKenzie et al. in press, NCAS TR no. 14.
3. Correction of Analytical Techniques

- This task has been completed.
- Published as Skjemstad et al. 2000, NCAS TR no. 15.
- Soil samples were provided by State Laboratories / archives and the analysis completed by CSIRO.
4. Soil Properties Data Map

- This is completed by relevant State / Territory agencies to the extent of current knowledge for most States.
- Ongoing works in the NT and Victoria.
- A synthesis of reports is currently being prepared by the NCAS.
5. Land Use and Management Information

• This task has been completed by a variety of States / Territories (or agreed agents).

• Published as Swift & Skjemstad in press, NCAS TR no. 13.
6. Plant Residue Inputs in Agricultural and Grazing Lands

- Main focus on grazing systems
- Also considers ancillary data such as root:shoot
1. Forest Soils

- State of knowledge, particularly models, not as advanced as in agricultural applications

- State of knowledge assessment complete (Polglase *et al.* 2000, NCAS TR no. 20)

- NCAS model framework and knowledge and data from the agricultural program will accelerate understanding

- Model tests have been positive - to be published as NCAS TR no. 31
Model Framework

FullCAM is an integration of existing products:

- Forest Growth: 3PG
- Forest Management: CAMFor
- Agricultural Management: CAMAg
- Litter Decomposition: GENDEC
- Soil Carbon: Roth C
FullCAM Model

Forest

Agricultural System

Trees

Debris

Soil

Products

Crops

Debris

Soil

Products
2. Model Development

- Sensitivity testing
- Model testing
- Move from Excel (test) products into efficient ‘code’
- Code engine complete
- User interface designed and now being developed to enable ‘plot’, ‘estate’ and ‘spatial’ operation