FLINTpro

Revealing the carbon value of multi-uses forests

Geoff Roberts - FLINTpro
Mike Sutton - Forestry Corporation of NSW

October 2023

Revealing the carbon value of multi-uses forests

- Why quantify carbon?
- What do we mean by carbon value?
- How did we did we do it?
- What did we find?

Why quantify carbon values if not selling?

- Voluntary commitments (e.g. Net Zero)
- Increasingly mandatory reporting requirements

What do we need to know about carbon values?

1. What is the carbon stock in the forest?
2. Is forest carbon increasing or decreasing?
3. Why is forest carbon changing?
    a. Are there spatial patterns or temporal trends in these changes?
4. What are the impacts outside of the forest (HWP)?

How is this quantified?

- Cover all key carbon ‘Pools’ and ‘Fluxes’
  - Aboveground Biomass
  - Belowground Biomass
  - Dead Organic Matter
  - Harvested Wood Products

- Account for processes and events across space & time
  - Growth/Decomposition
  - Fire
  - Harvesting
  - Changes in forest extent

- Break results into key reporting categories:
  - Carbon Stock
  - Gross Emissions
  - Gross Removals
  - Net Change

How we approached it

Data Sets

- Forest Corp → Admin Boundaries
- NCAS → Forest Cover Product
- NVIS → Natural Forest Type Data
- Forest Corp → Plantation Extent
- NCAS → Forest Biomass Parameters
- Forest Corp → Harvest History
- Forest Corp → DB of Harvest Data
- Forest Corp/RFS → Fire History
- NCAS → Climate Data

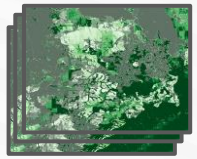
Harvested Wood Products Module

FLINTPRO

Tier 3 Forest Module (TYF)

Tier 3 Dead Organic Matter

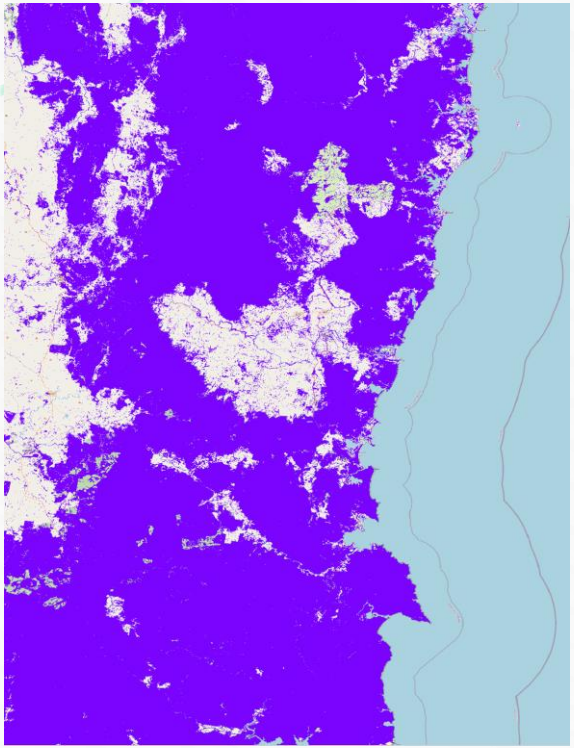
Spatial Time-Series Outputs



Complete Output Database

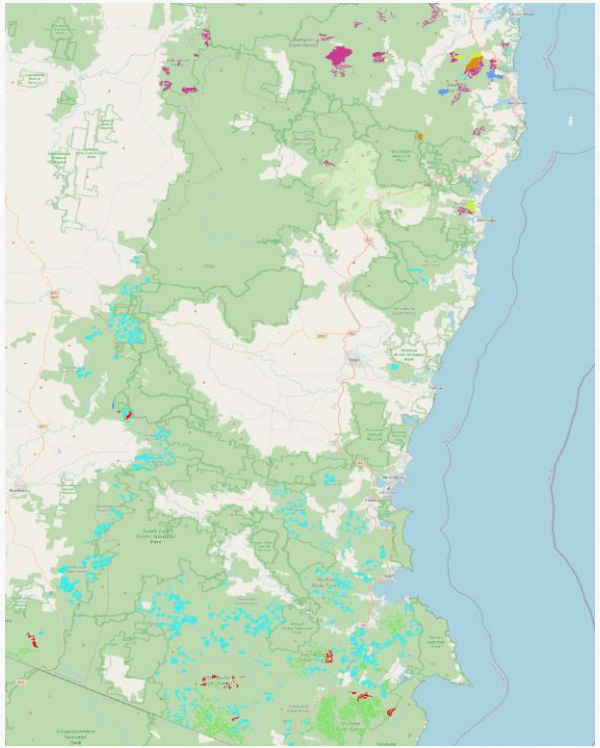
- General and Customised Reporting
- Built-in Visualisation and Analysis
- Exported

Drivers of Change



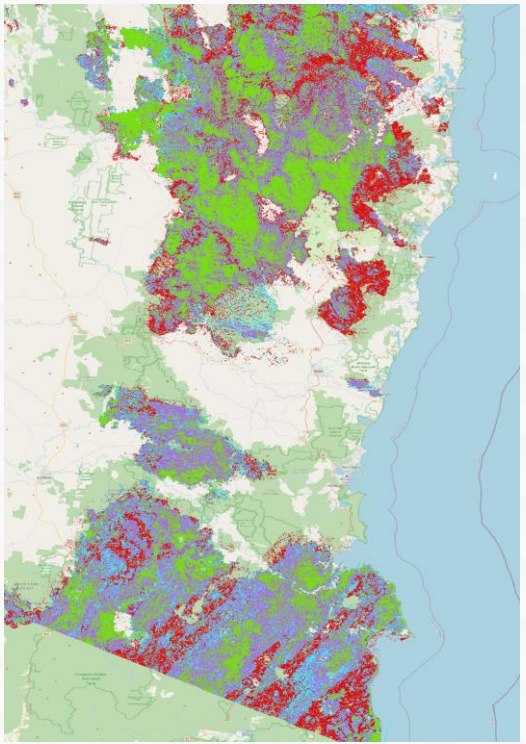
Source: National Forest and Sparse Woody Vegetation Data (Version 6, 2021 Release)

Example 1 year of forest data



Source: Forestry Corporation NSW

Example 15 years of harvest data



Source: NSW and Department of Planning and Environment 2020, Fire Extent and Severity Mapping (FESM)

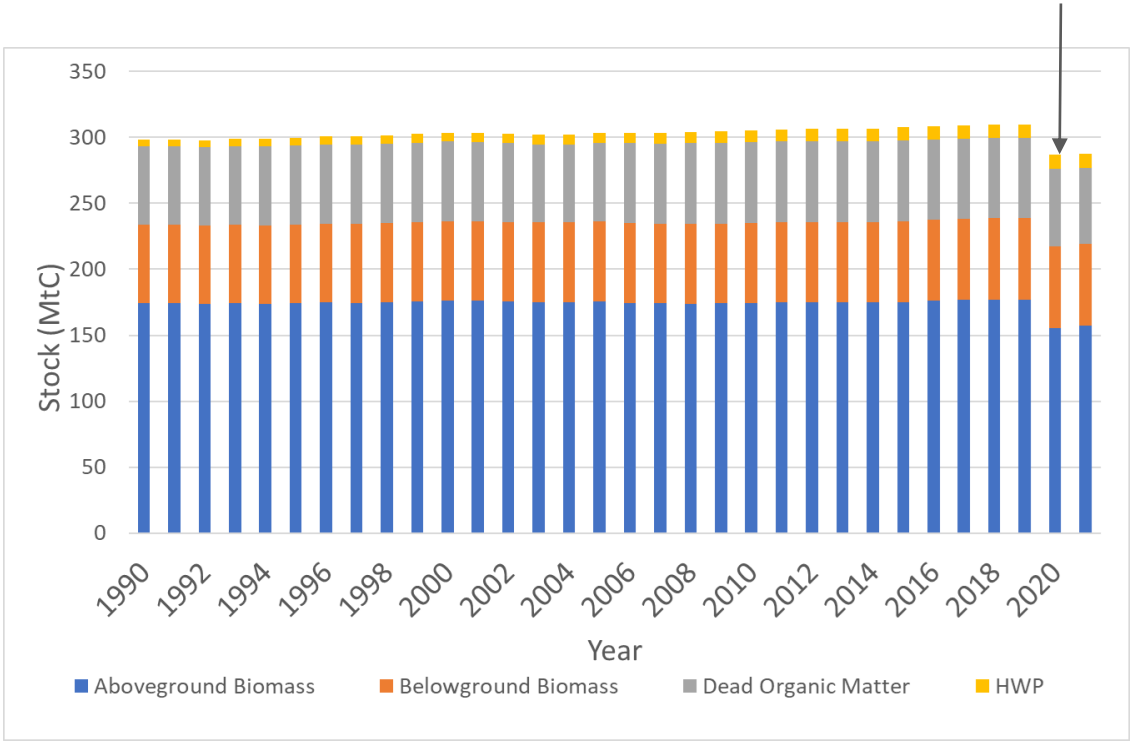
Example 4 years of fire data

Outputs - Forest Carbon Stock All Forests

The resulting value

- Storing ~1,100Mt CO_2e in the forest
- Pre fire - increasing ~1.5Mt CO_2e/yr
- A ~80Mt CO_2e decline in stock post fires

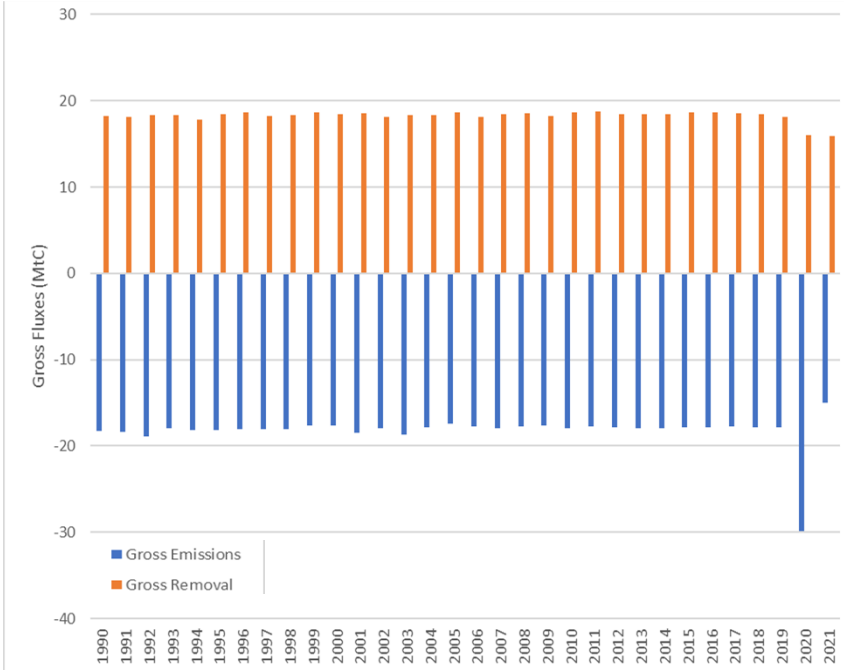
Australian annual emissions* are ~464Mt CO_2e



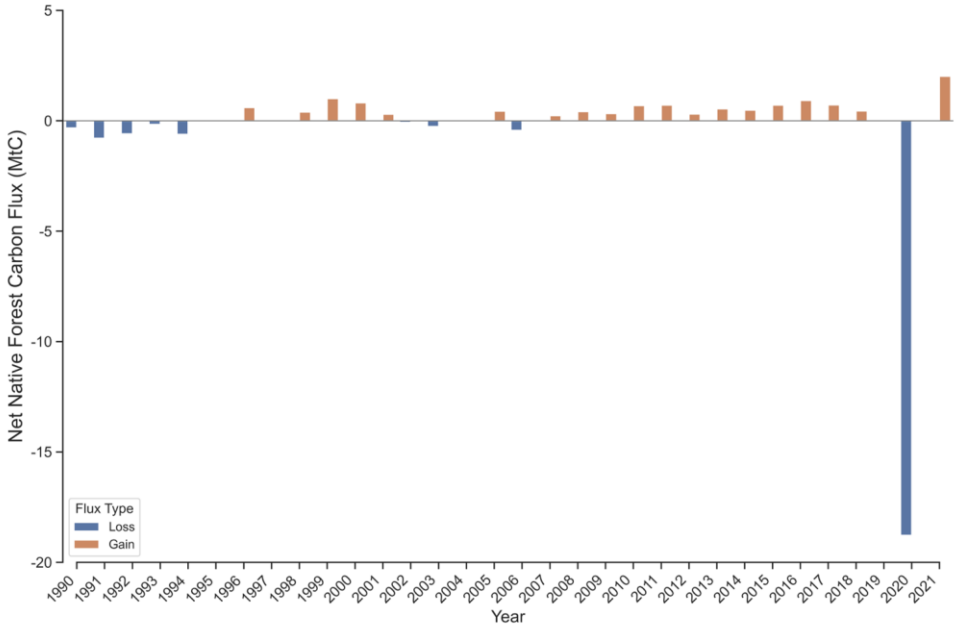
*Source www.dcceew.gov.au

Outputs - Forest Carbon Stock Change Native Forests

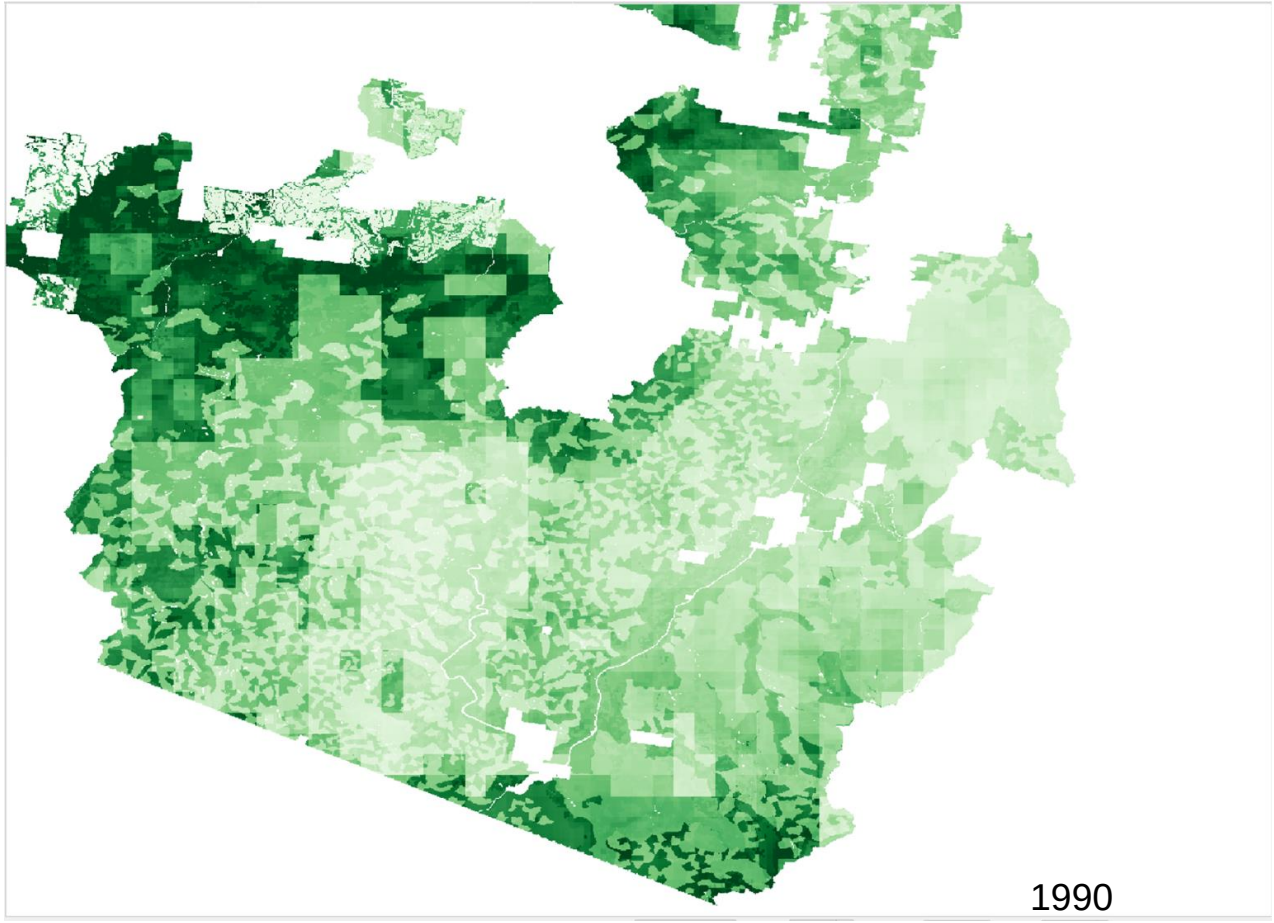
Gross Fluxes



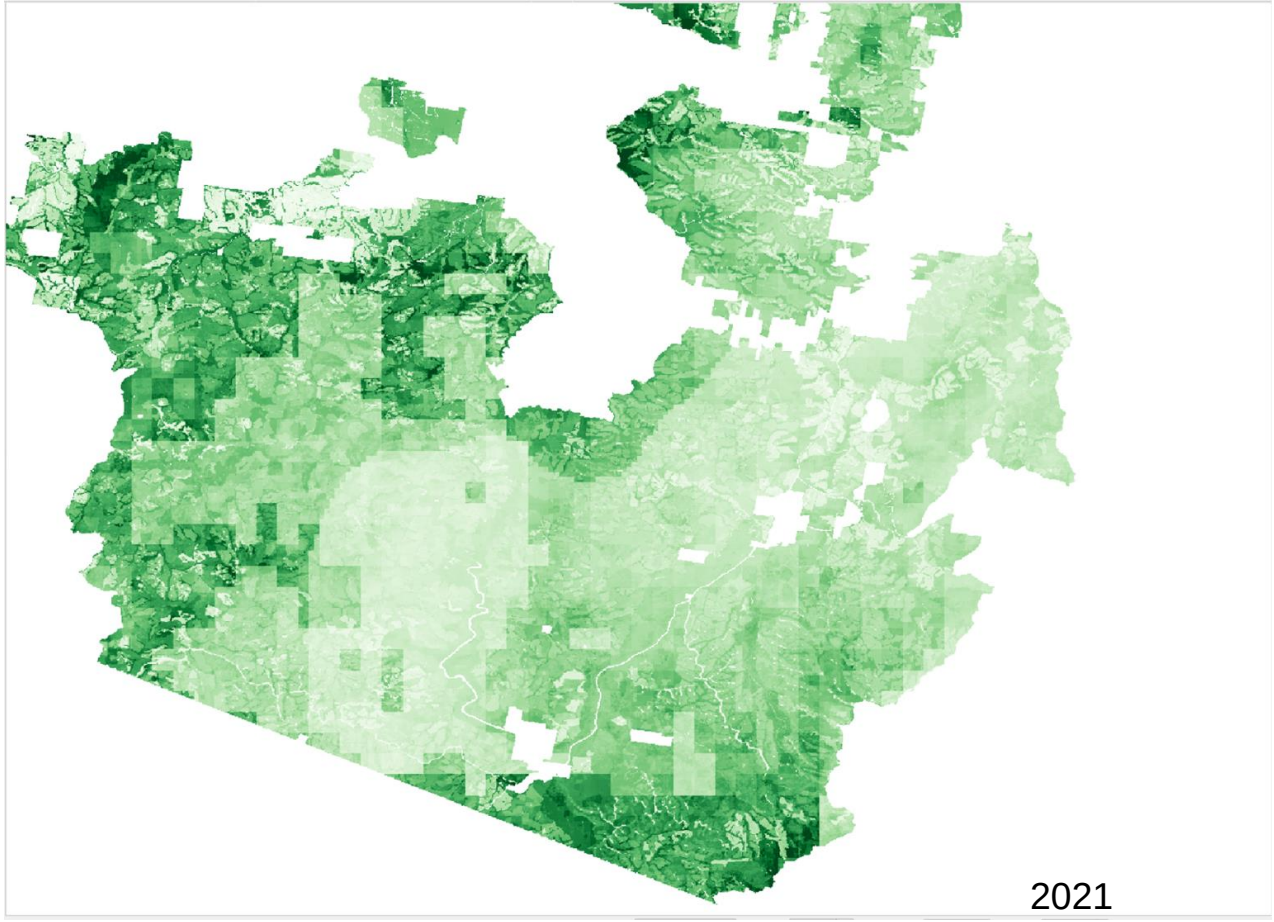
Net Fluxes



Improving data



Improving data



Concluding thoughts

- Multi-use forests are important carbon sinks, and need to be monitored
- It's important to reflect the spatial and temporal variation - simplistic methods limit management choices
- International and national reporting standards determine minimum acceptable methods
- We have to be clear on what we're talking about - these are not comparable:
  - Stock
  - Gross Emissions of carbon to the atmosphere
  - Gross Removals of carbon from the atmosphere
  - Net Change
- Transparency is needed so that natural capital markets can flourish


FLINT pro
Geoff.Roberts@FLINTpro.com
Natural Capital Solutions for Climate Action