

Australian case-study in land use emissions reconciliation

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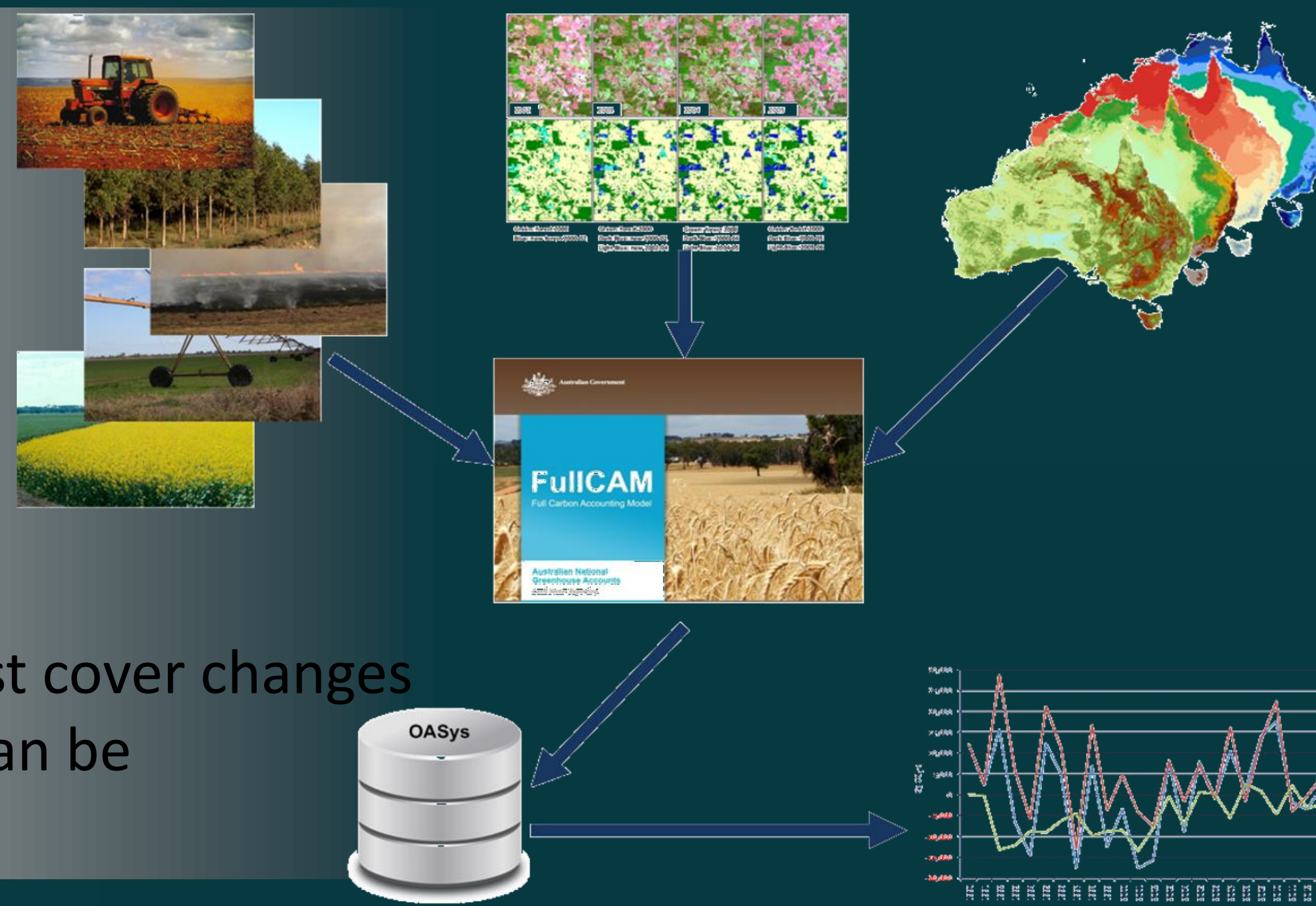
Australian Government

Department of Climate Change, Energy, the Environment and Water

Australia's National Greenhouse Accounts use a modelling approach that is comparable to a book-keeping model:

FullCAM integrates:

- Monthly climate and rainfall
- Spatial data (land use, fire scars)
- Agricultural and economic statistics (e.g. agricultural production & management, harvested wood products),
- Remote-sensing of forest cover changes.

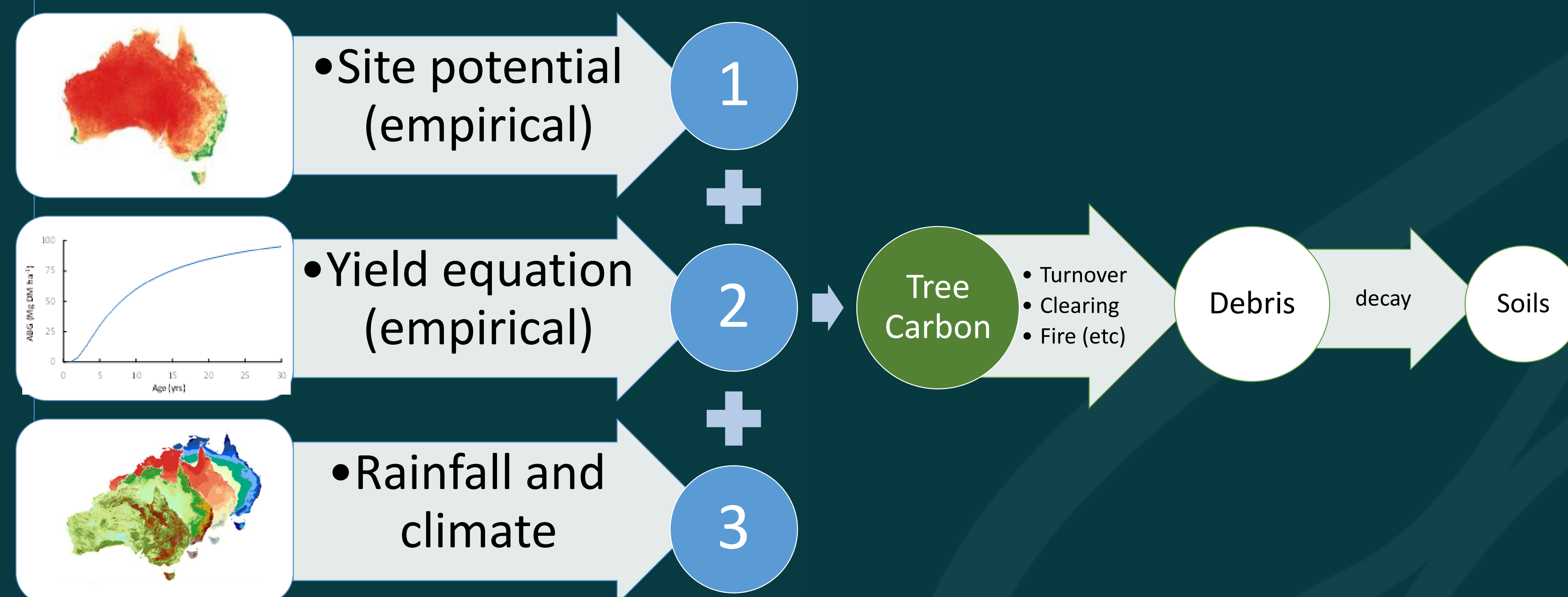
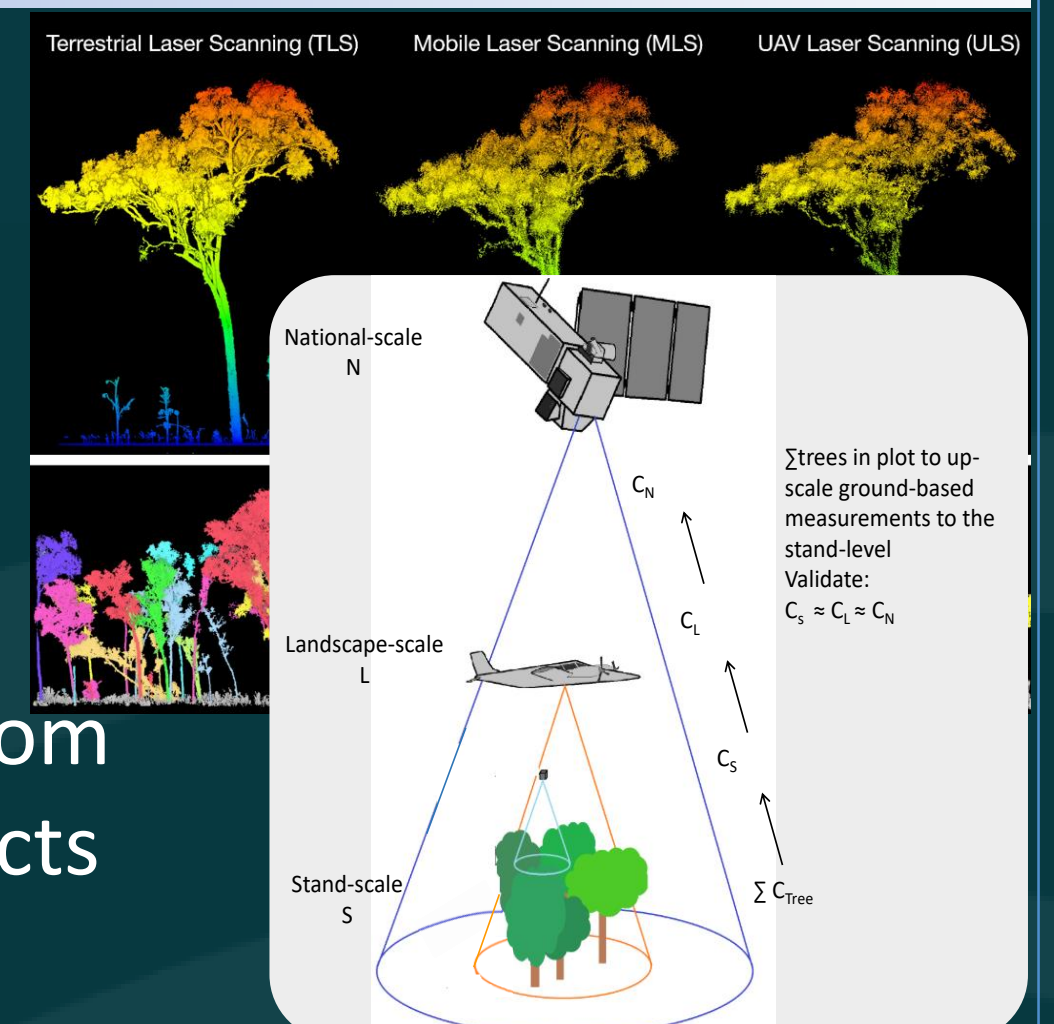


Visual attribution of remotely sensed forest cover changes ensures that permanent land use change can be distinguished from natural variability.

Australian NGGI continues to be an early adopter of remote sensing and data integration technologies

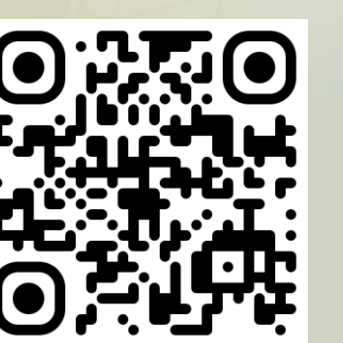
Levick et al. 2021. Remote Sensing

- Developing novel cover-to-biomass modelling approach with CSIRO
- AI models for change-attribution: isolating anthropogenic impacts from indirect and natural impacts



Further info:

Sign up for a free account:
www.fullcam.gov.au



Australia's National Greenhouse Accounts
<https://greenhouseaccounts.climatechange.gov.au>

Forrester et al 2024 (FullCAM)
<https://doi.org/10.1016/j.envsoft.2024.106064>



Download national forest cover data
<https://data.gov.au/data/dataset/national-forest-and-sparse-woody-vegetation-data-version-7-0-2022-release>

Australian case study: close engagement between inventory compilers and earth systems modellers is key to reconciliation

Detailed, quality assured NGGI (spatial) data shared with research community can improve global / regional models

- The Department's remote sensing specialists visually attribute all forest loss each year across Australia—this human resources effort is hard to replicate by research institutions
- The Department shares this spatial information on the location of LUC activities, and ELUC emissions data with the modelling community. Conversations are ongoing about future data needs and improving access and transparency.
- The Global Forest Observations Initiative (GFOI) has developed excellent guidance on using remote sensing data for forest monitoring in a consistent manner, useful to both NGGI and global modelling communities.

Downscaling & reflecting diverse NGGI approaches is a better solution than generalised assumptions

- Inventories are all different and reflect national circumstances—simple global assumptions cannot reconcile global models with national data.
- Building networks and data sharing between NGGI, remote sensing and modelling communities helps avoid unjustified assumptions and misunderstanding:
 - Australian inventory compilers work alongside remote sensing specialists in CSIRO (national science agency)
 - Increasing engagement with modelling community on data sharing and research outcomes
- Targeted research contracts have been an effective way to dedicate time and effort to understand and compare different models & what they represent, as well as different national circumstances & resulting inventory approaches.

Supporting and funding of primary research helps inventory compilers understanding of the state of science

- The Department has supported the Global Carbon Project to regionalise carbon budget through the National Environmental Science Program. This has provided new understanding about variability of carbon dynamics in Australian climate over decadal scales.
 - This insight leads to better-targeted inventory improvement plans, and helps inform net zero policy for agriculture and land
- Co-location in the Department of inventory compilation and IPCC focal point responsibilities promotes sharing of research results with the global community