EO 4 Ecosystem Accounting 2022

Stories of the Land and Sea:

Australia's use of earth observation data for land and ocean accounts

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Australian Bureau of Statistics

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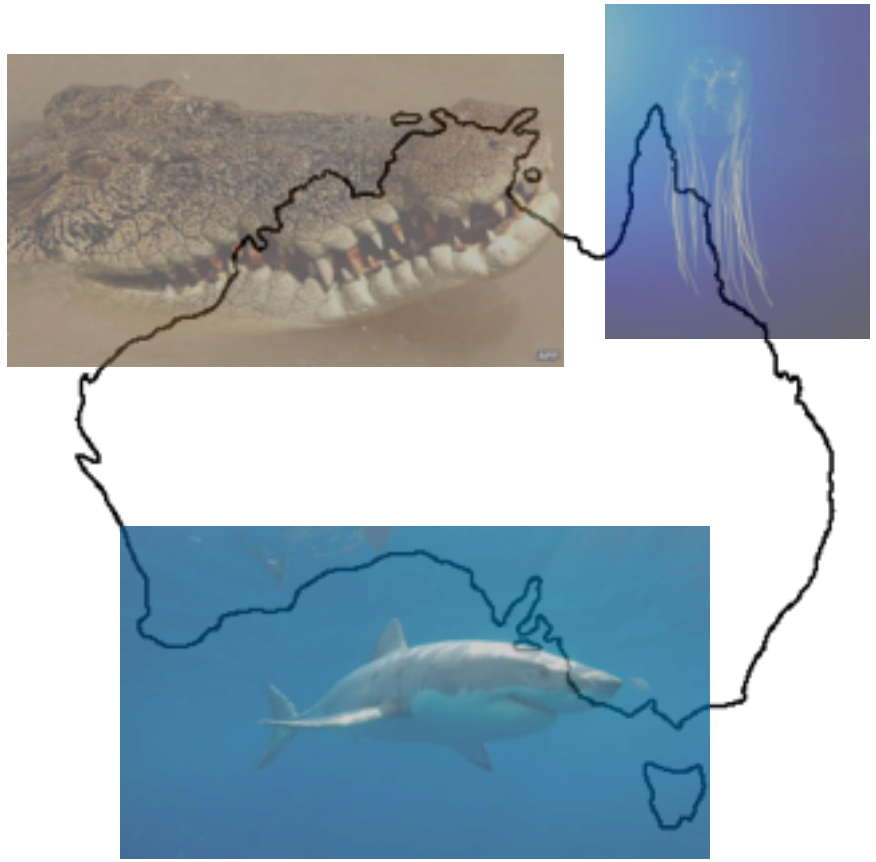
Context

ABS recently released Australia's the first National Land and Ocean Accounts – Blue carbon focus

National scale ecosystem accounts fundamental in supporting effective policy development



Australia's coastline:

- over 34 000 kms
- more than 1000 estuaries
- large extents inhabited by sharks, crocodiles and deadly jellyfish

Survey data doesn't cut it!

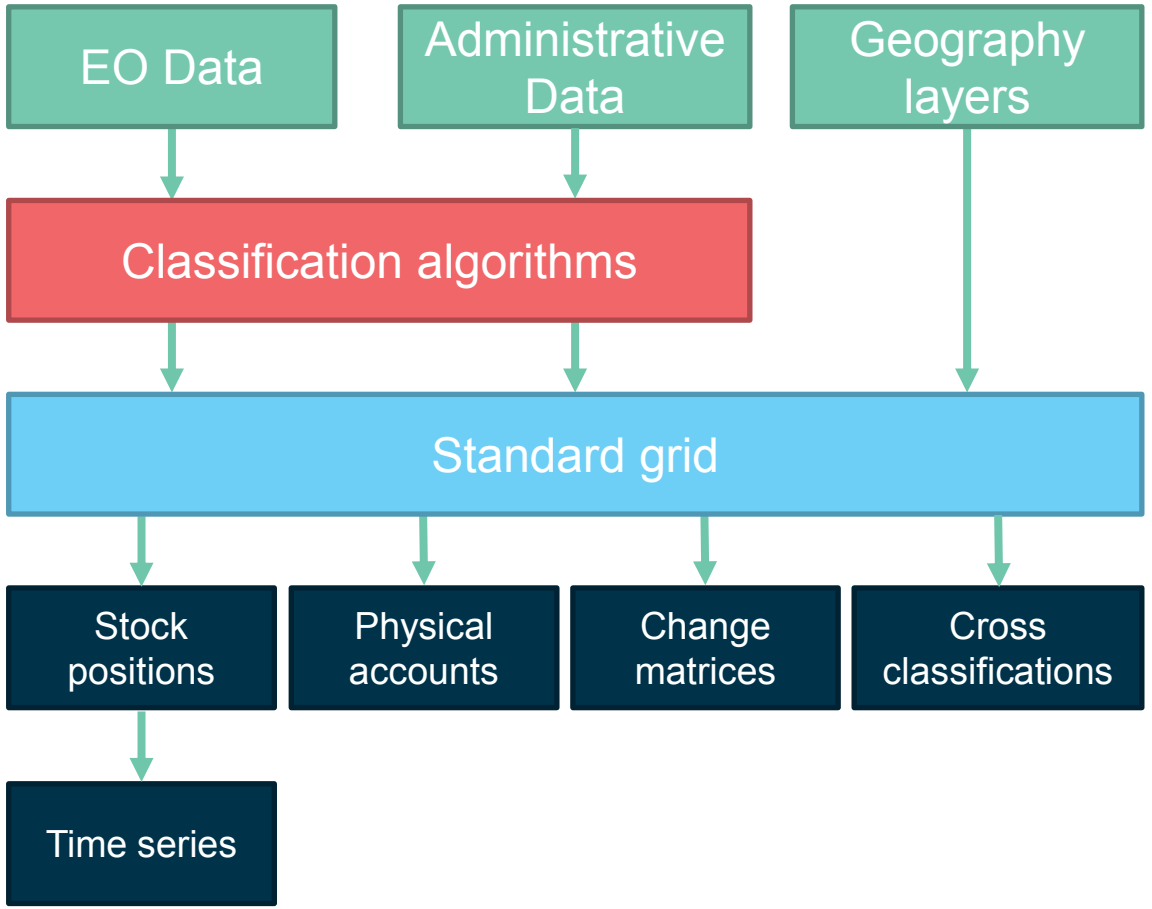
Remote Earth Observation is the only practical way to obtain national scale data that is replicable over time and is fit for Ecosystem Accounting purposes

Penny Johnson, Oceans team leader

Accounting for land and oceans

Why do we need interoperable systems?

- Earth observations allow for the classification of terrestrial, coastal, and marine cover, uses, and ecosystems
- A standard grid can allow for the integration of data
- A standardised processing approach allows for accounts to be created from new data sources in a highly efficient manner
- In Australia we have used Digital Earth Australia who produce land cover and mangrove data
    - We have also used experiment seagrass and saltmarsh data
    - These sources are planned for integration



Joel Larwood, Environmental Statistical Analyst

Benefits to analysis

Temporal earth observation data can be analysed over time to monitor environmental changes

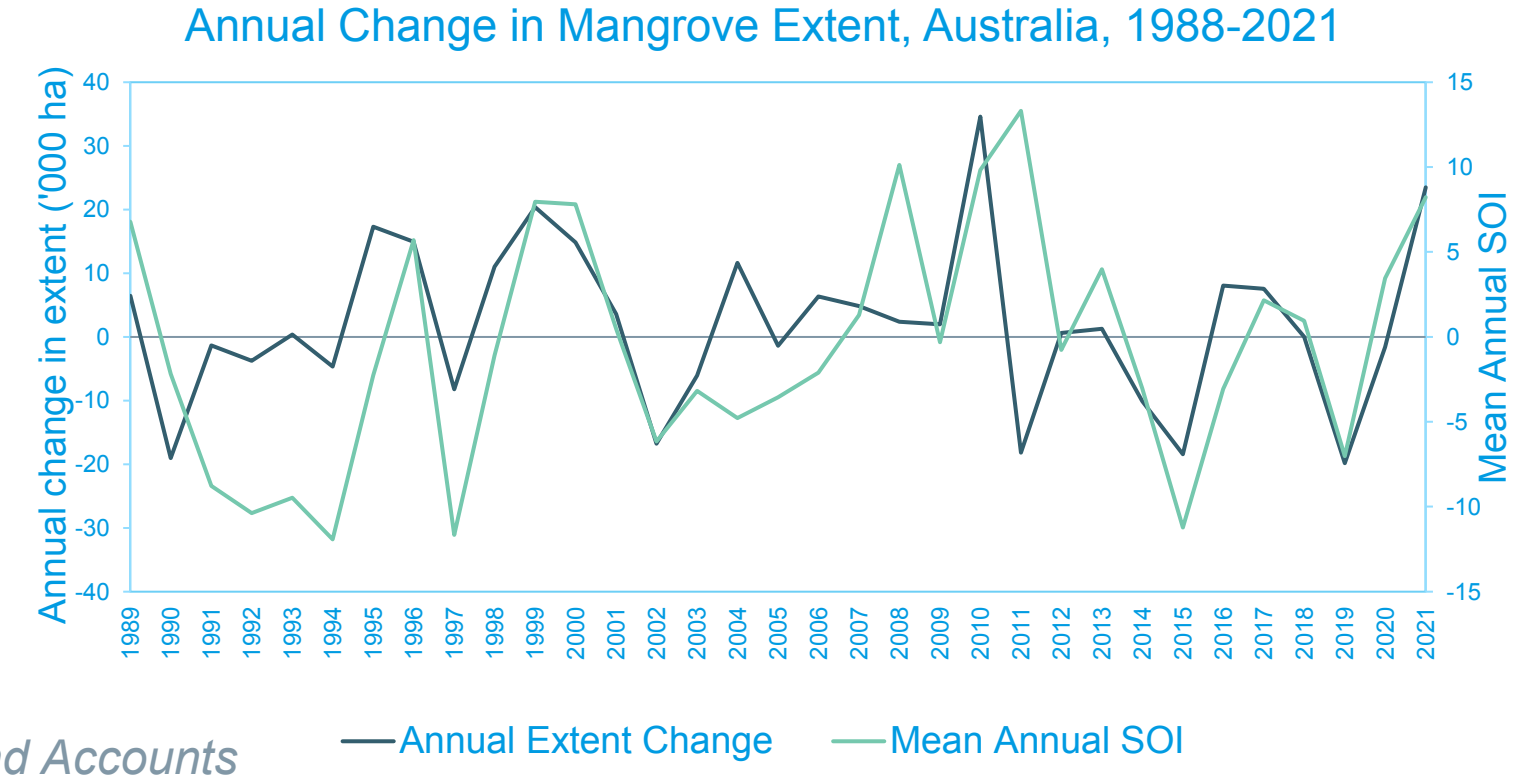
Southern Oscillation Index (SOI) is an indicator for El Niño and La Niña weather patterns, which influence rainfall in Australia

Analysis in conjunction with similar datasets enables us to better understand ecosystems

- e.g. climatic cycles and impacts on land and ocean ecosystems

Ultimately, models can be developed to predict changes

- Inform policy and environmental management actions



Vikki Lambert, Statistical Analyst, Land Accounts

Designing models from integrated EO systems

Input data

Earth Observation data

- DEA Mangrove Canopy from Geoscience Australia
- DEA Coastline from Geoscience Australia

Tabular data

- Dwelling & population counts from 2021 Census

Coastal protection model

Spatial model to identify mangroves offering protection from storm surge

Outputs & constraints

Metrics on Ecosystem Services

- Length of coastline protected
- Dwellings protected
- People protected

Limitation/ Opportunities

- Simple model, used for mangroves and saltmarsh ecosystems
- Scope for refinement (data & spatial method)
- Incorporate new EO and admin datasets

Mir, Team Leader, Land Accounts

Next steps

Firming the platform for increasing the range of things we can do (ecosystems, models for ecosystem services, integration with ARIES).

Evaluate progress so far with our stakeholders, lessons learnt.

Increasing use within our organisation (agricultural statistics?, construction?, urban phenomena?)

Improvements to our analysis

- Linkages to real world changes (eg Tourism expenditure by region x land cover/ecosystems changes)
- Developing interoperability with social and economic data (Australian Census 2021…)

Building interaction with our systems from other stakeholders (hackathon, policy data platforms)

Peter Meadows, Project Manager, Land, Oceans Ecosystems and Tourism Accounts