Global datasets and innovative tools for ecosystem accounting

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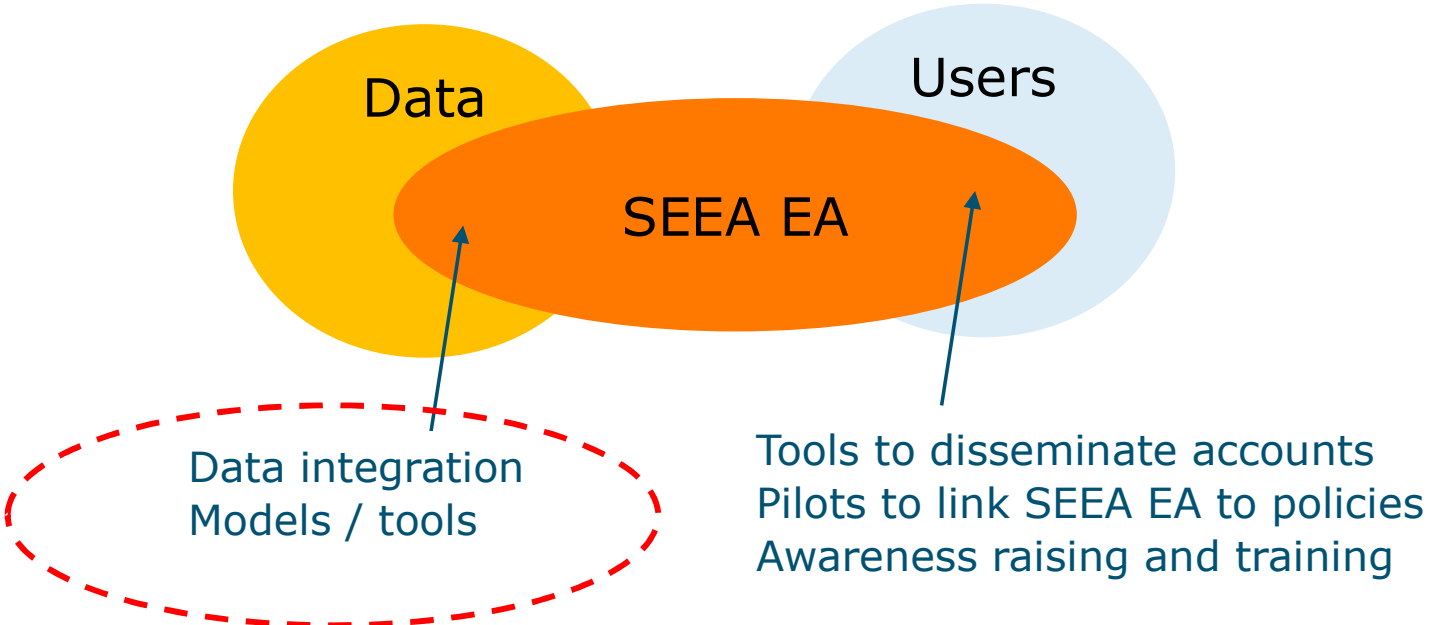
SEEA EA in context

- Present

- Required

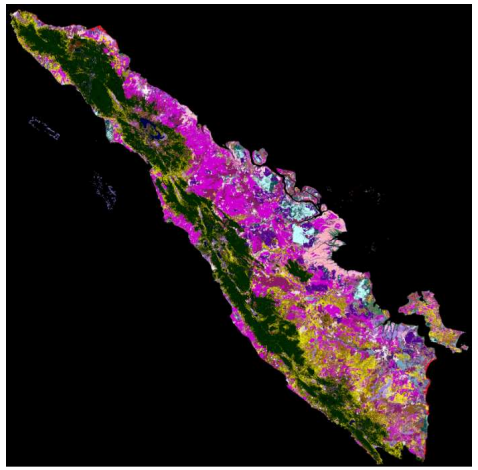


Relevance of these datasets and tools

- Including regulating and cultural ES in Ecosystem Accounting requires complex models and considerable data
- Relevant datasets are increasingly globally (or at continental scale) available at high resolution and high accuracy
- Datasets include both data that can be used as input data for model development; or 'near account ready data'

- This presentation: some examples only

Types of datasets

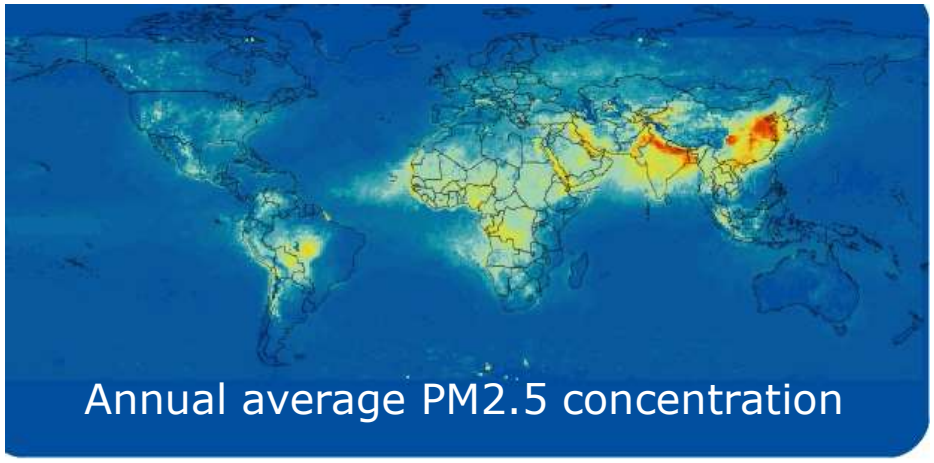


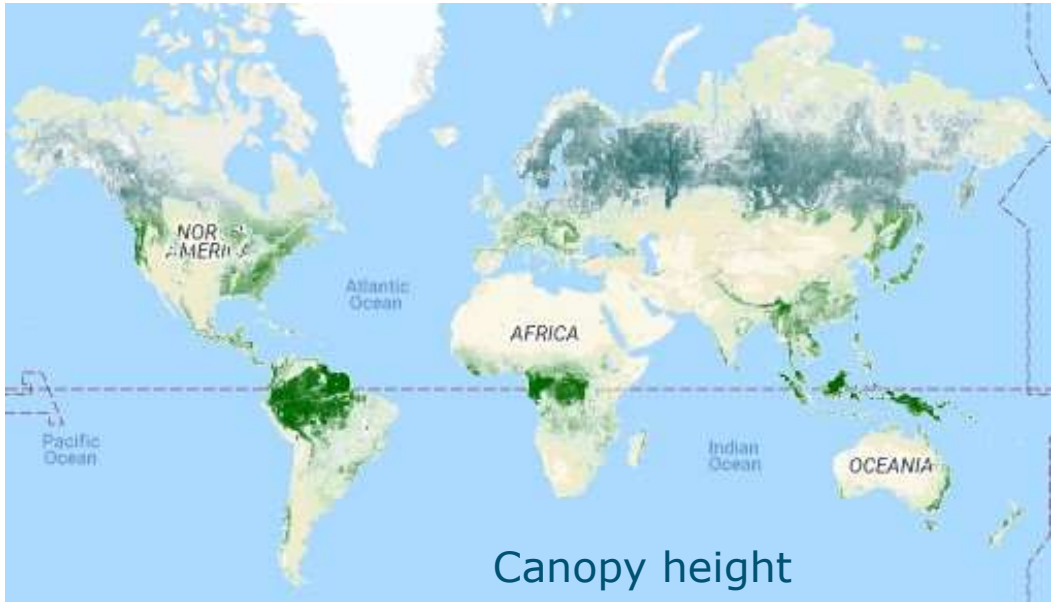
- Observed data (Earth Observation)
  - Regular updates (usually)
  - Accuracy known
  - Increasingly: freely available
- Modelled data
  - May be outcome of specific project, updates not guaranteed
  - Accuracy may or may not be given
- Crowdsourced data
  - Requires internet scraping
  - Access rights may change

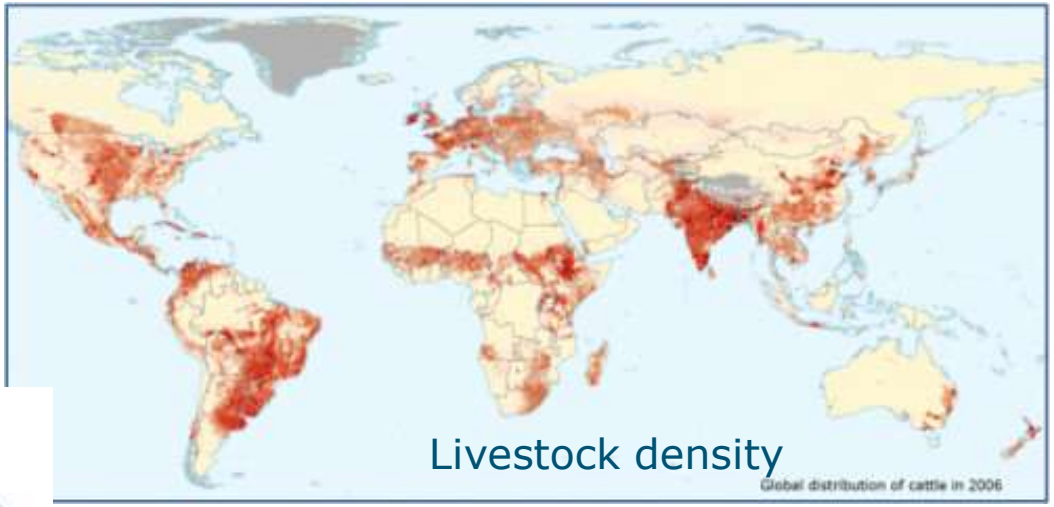
Global datasets

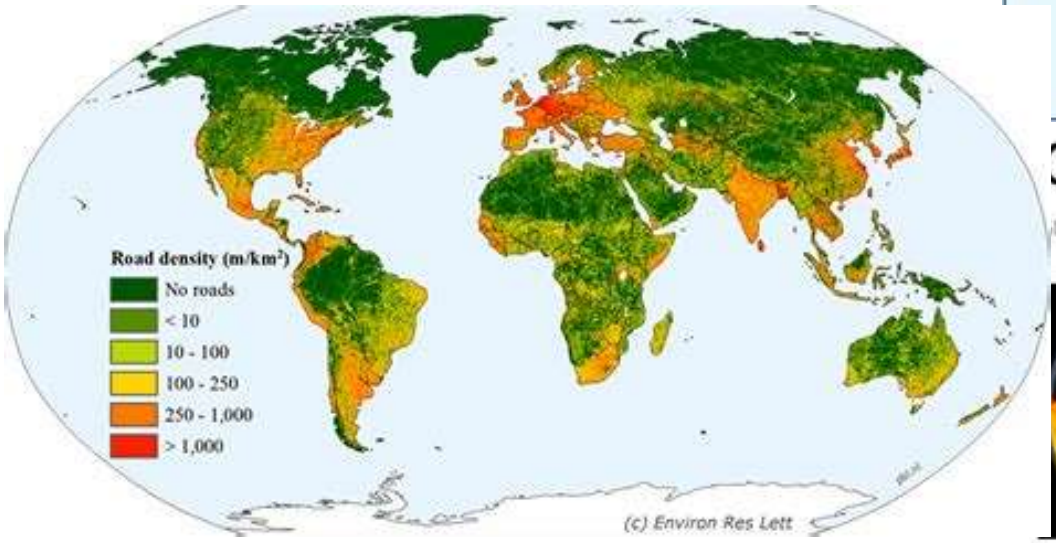
Considerations:

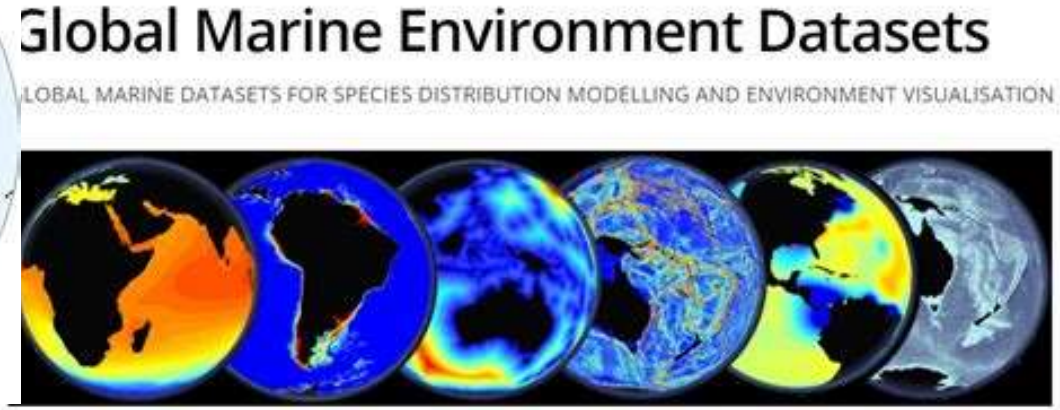
- Regular updates needed
- Accuracy
- Resolution



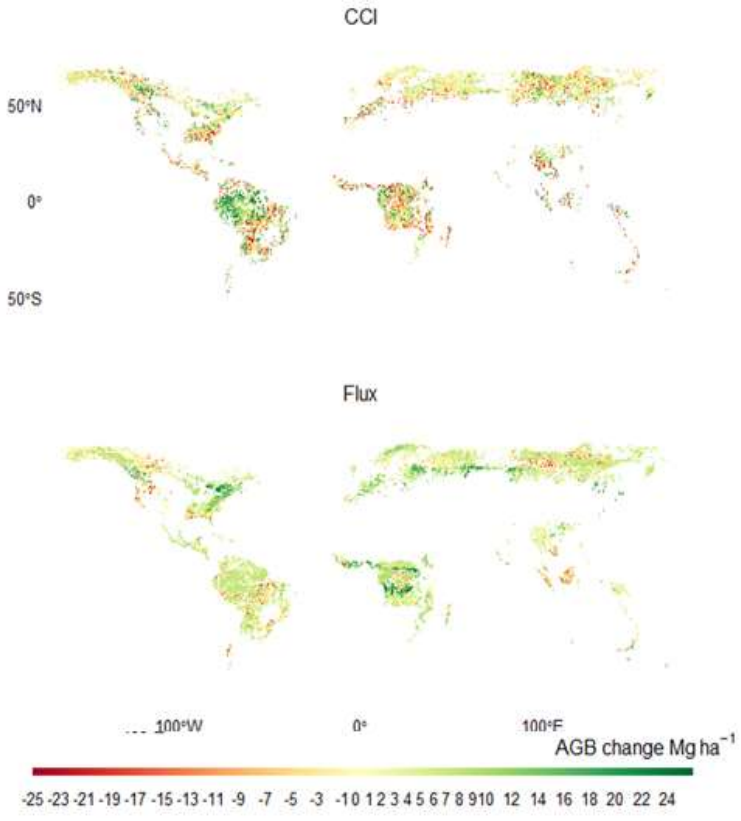


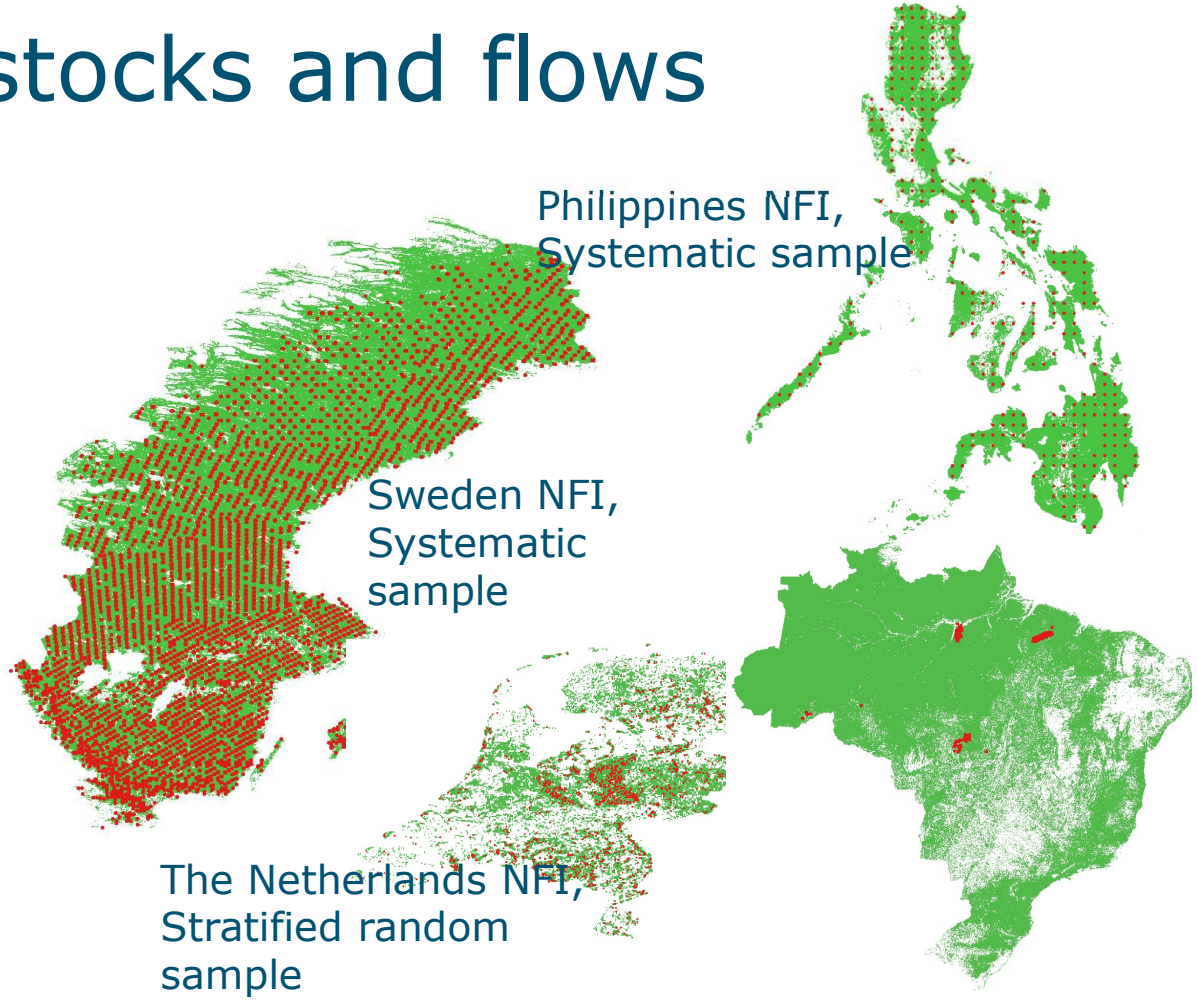






Modelling carbon stocks and flows



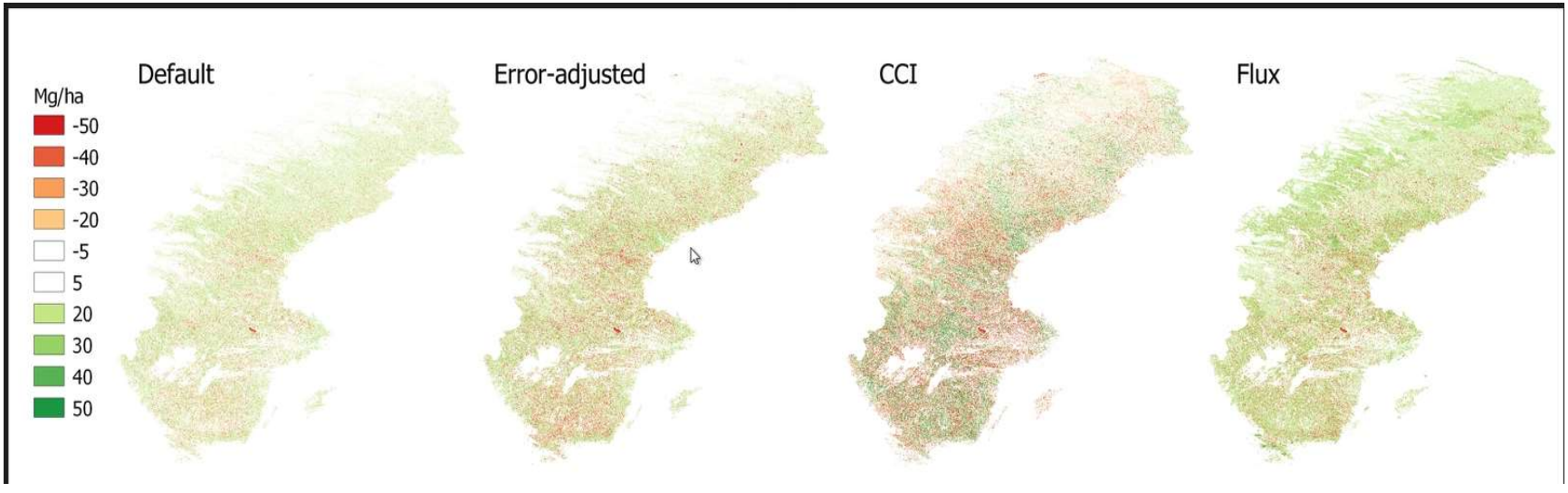


Philippines NFI, Systematic sample

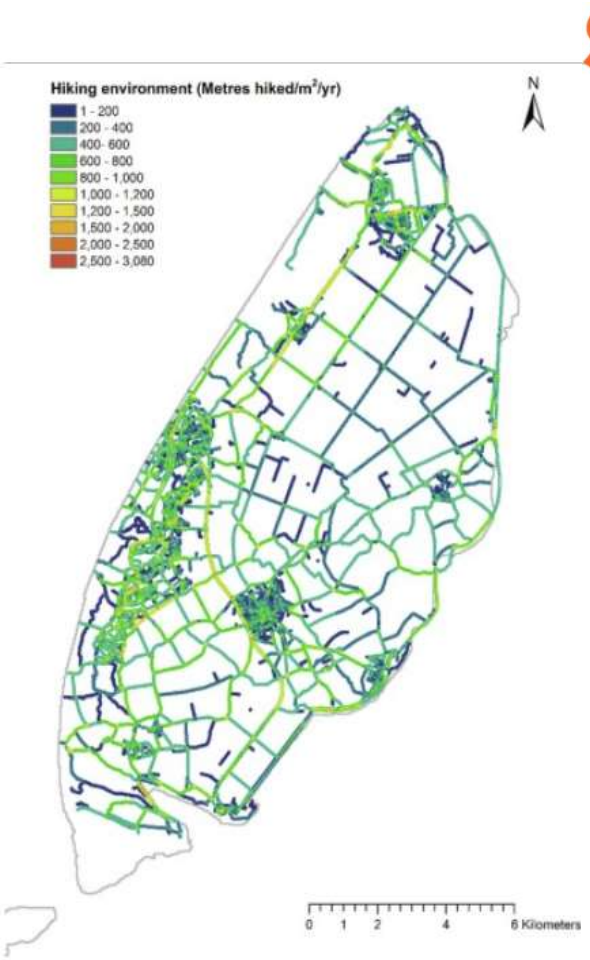
Sweden NFI, Systematic sample

The Netherlands NFI, Stratified random sample

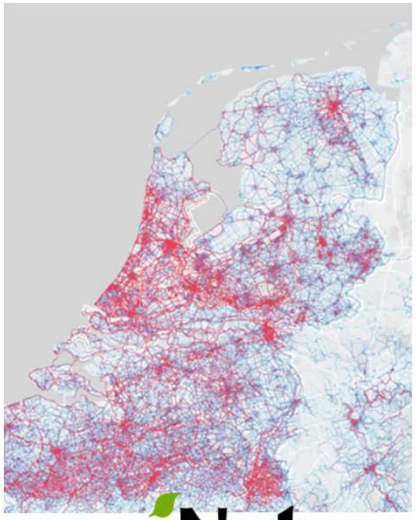
Brazil LiDAR, Preferential sample



Cultural ecosystem services



STRAVA™



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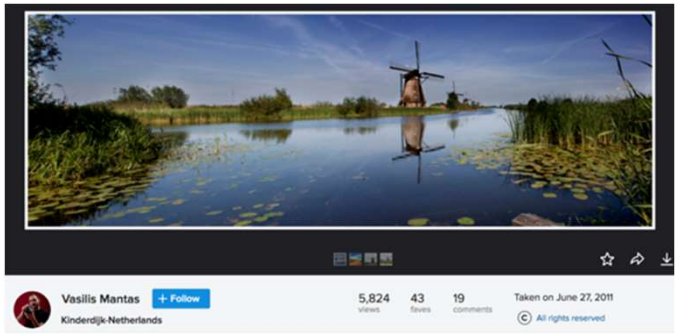

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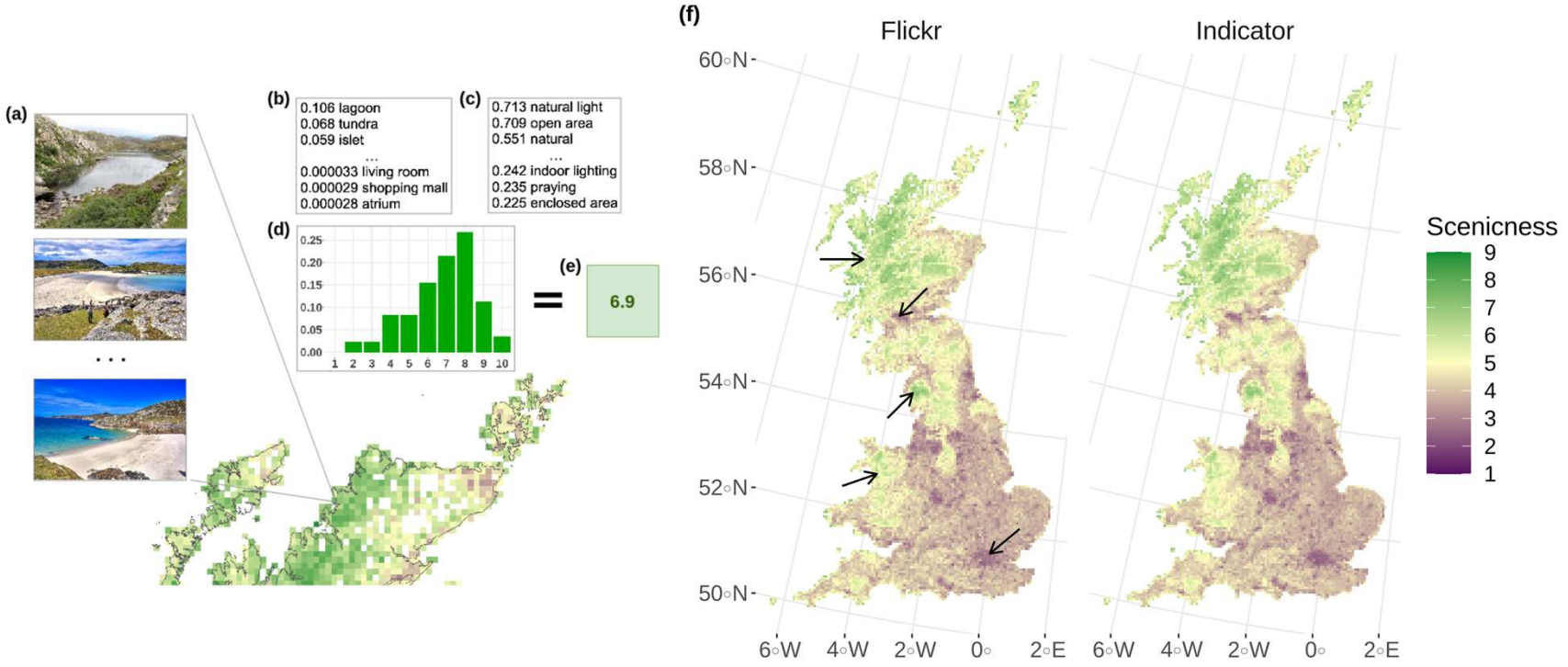
Measuring landscape aesthetics



Deep learning-based models used **(a)** Flickr images to generate **(b)** 365 scene class scores and **(c)** 102 image attribute scores, as well as **(d)**, a normalised scenic rating distribution. These were then used to build a random forest model to generate **(e)** a scenicness prediction. In **(f)**, predictions of the random forest model for Great Britain are shown alongside a traditional indicator model.

Changes in rainfall patterns will undermine agricultural production in the coming decades

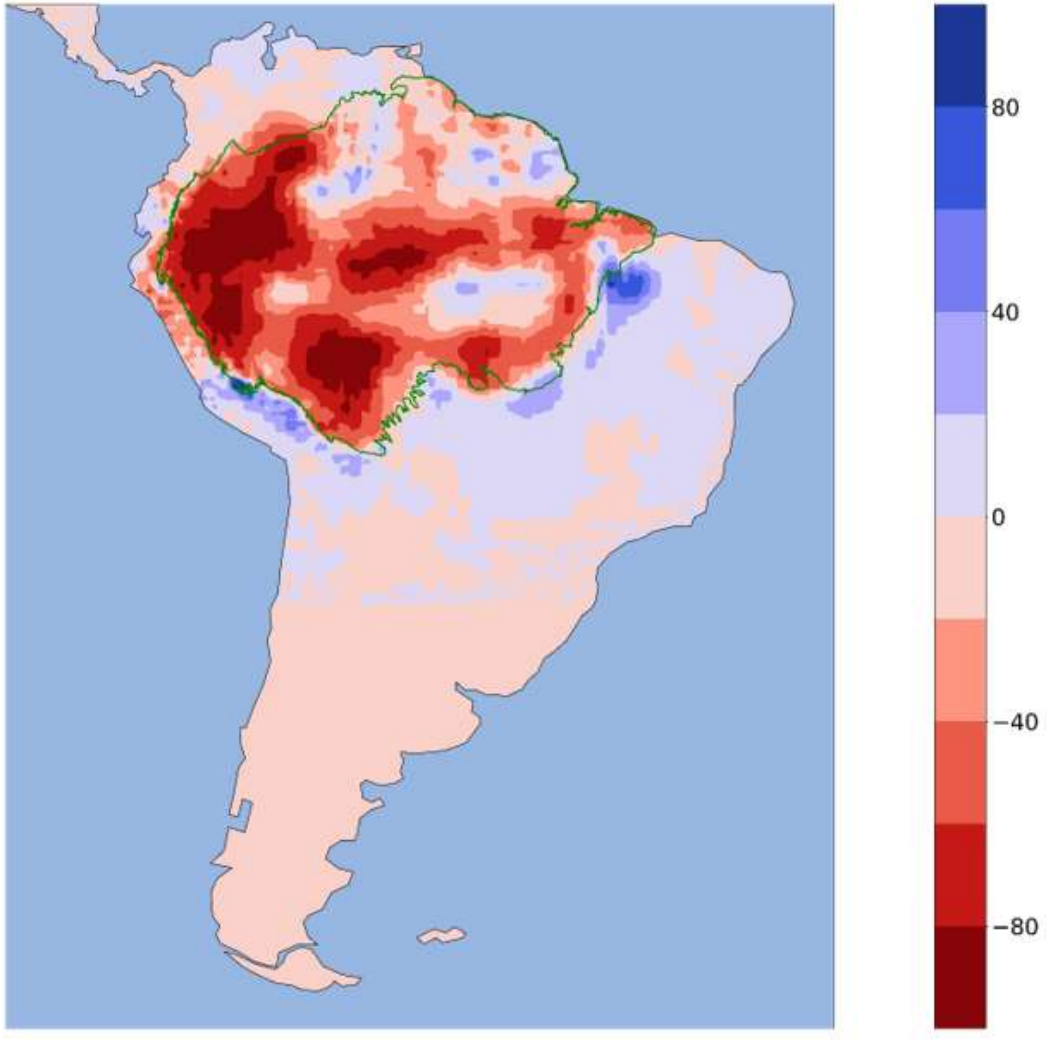


Fig. 7 | Relative changes (%) in rainfall magnitude as a result of the conversion of tree cover outside protected areas in the Amazon biome (green boundary) to pasture. Negative values indicate reduction in rainfall as a result of deforestation and positive values indicate increase.

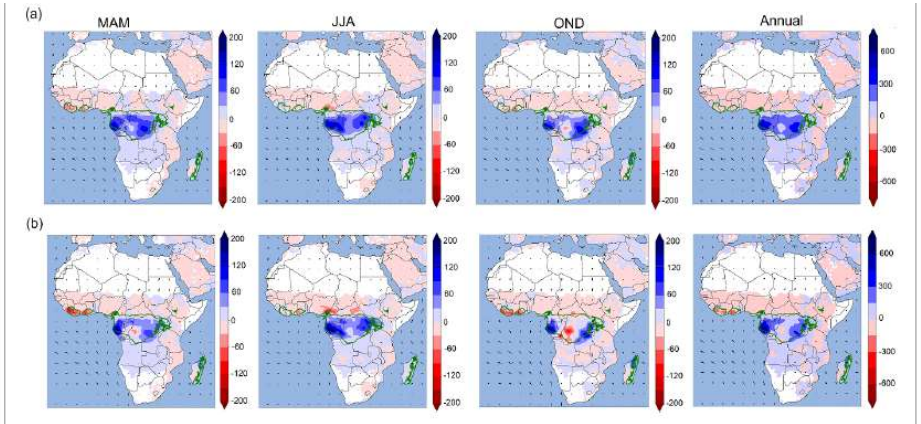


Figure 5. Changes in rainfall magnitude as a result of partial deforestation in the Guineo-Congolian region. (a) Change in mean rainfall magnitude as a result of 50% tree cover loss during the simulation period; (b) change in mean rainfall magnitude as a result of 70% tree cover loss. MAM refers to the March–April–May season, JJA refers to the June–July–August season and OND refers to the October–November–December season. The green boundary indicates the Guineo-Congolian region, where deforestation was simulated. The black arrows indicate wind direction and speed.

Duku and Hein, 2021

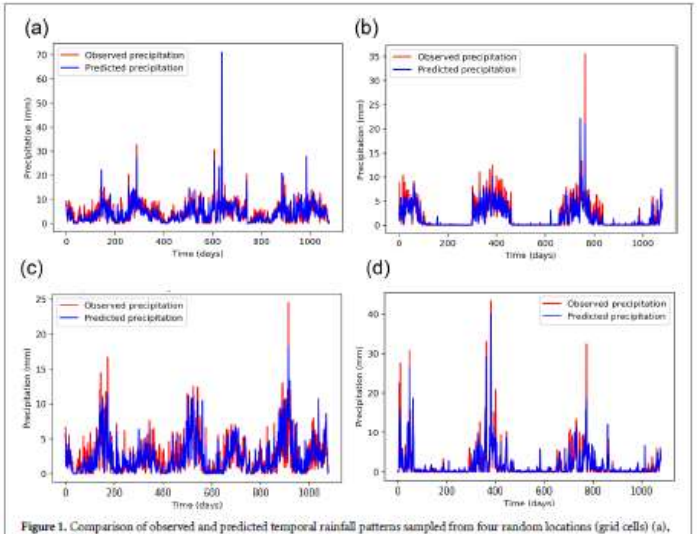
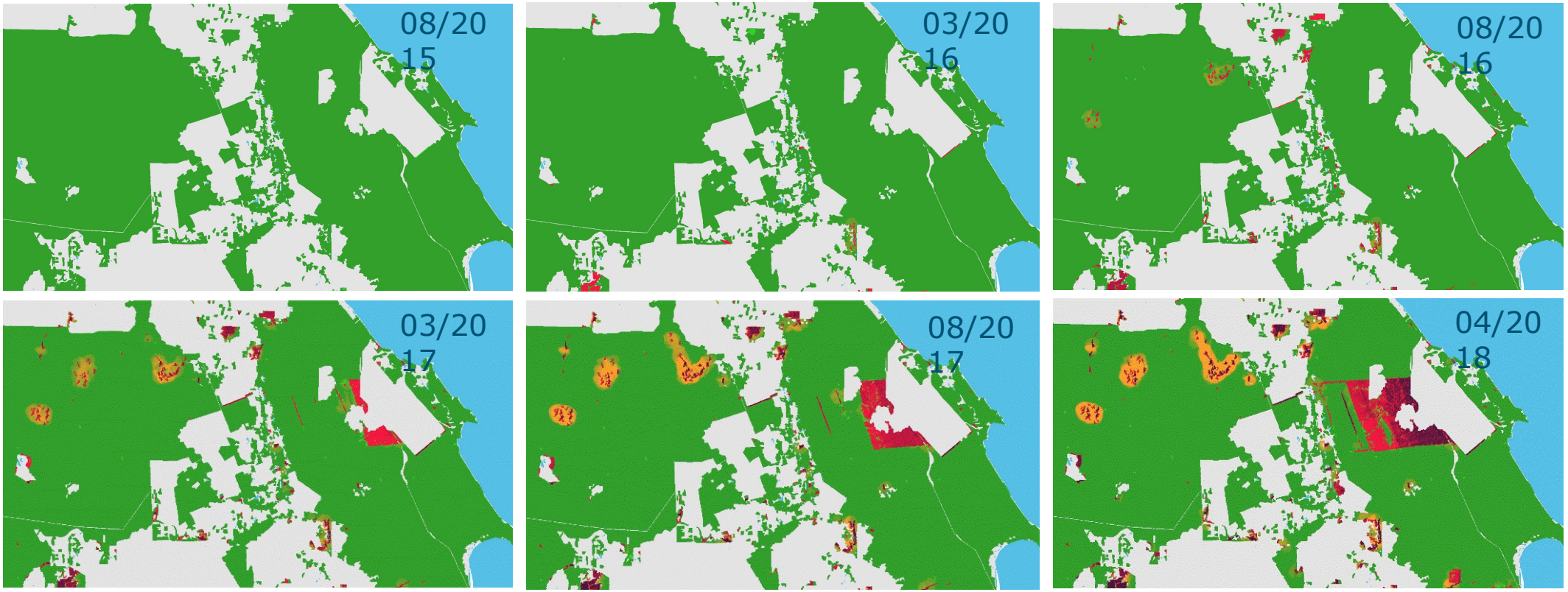


Figure 1. Comparison of observed and predicted temporal rainfall patterns sampled from four random locations (grid cells) (a), (b), (c), (d); time ranges from 1 January 2013 to 31 December 2015, which is the validation period.

Development of an oil palm plantation in a tropical forest – tempoal resolution?

Monitoring deforestation and forest degradation over Johor, Malyasia – 08/2015 to 04/2018



Deforestation | Degradation →

Near-realt time data, updated every 12 days

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How to make better use of these data?

- Assess data (accuracy, resolution, timeliness, updates)
- Establish repository / centre with long term funding
- In order to collect datasets, reach out to data providers to obtain and sustain access
- Reach out to pro-actively generate new datasets (e.g. mobile phone data)
- Model datasets
- Organise datasets according to SEEA EA
- Make data available using viewer and tools
- Actively promote and train people in using the data
- Inform regulators
- Reach out to other users, in particular businesses