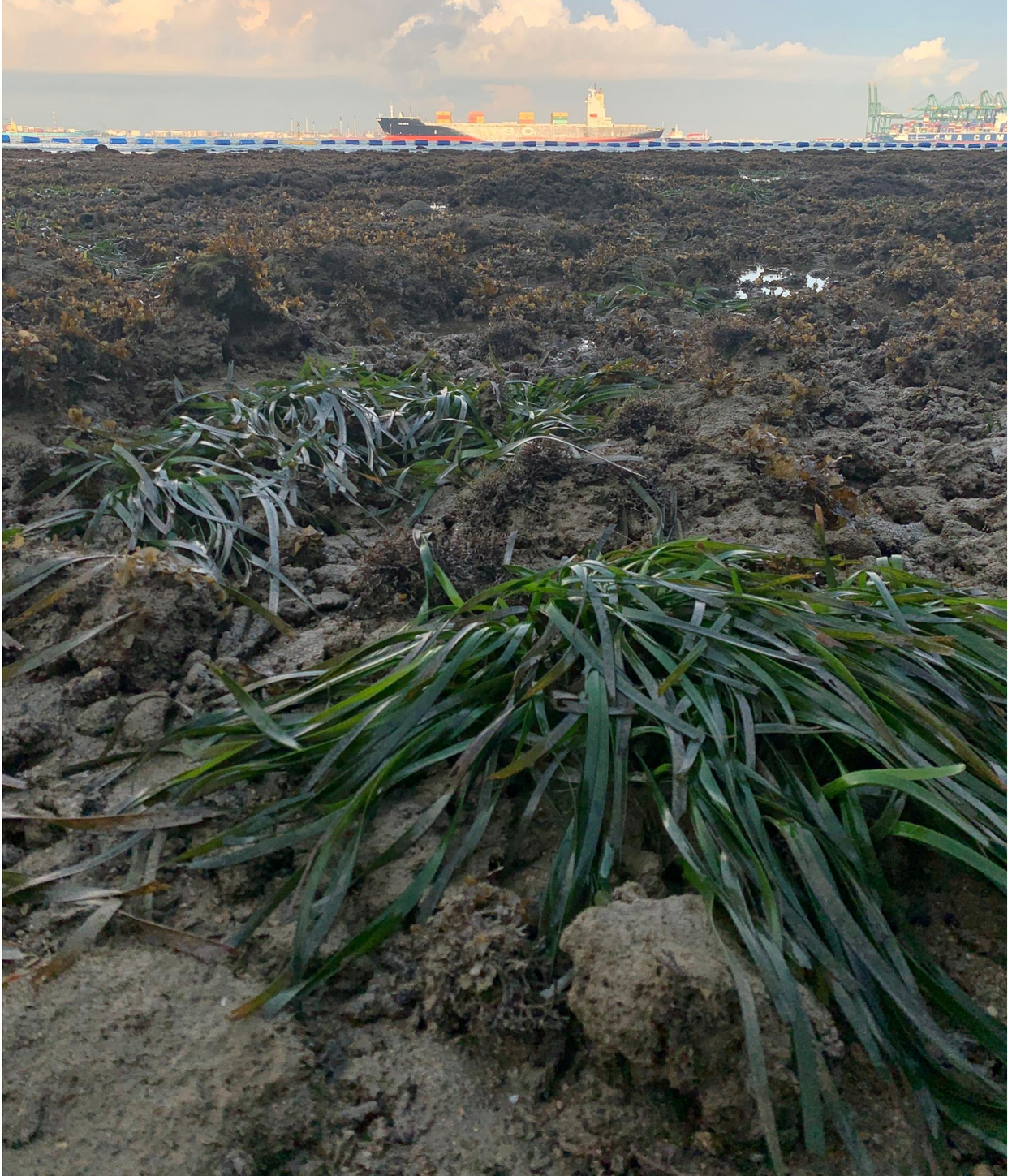

Data sources for coastal wetland mapping

Training Workshop Module 1: Introduction to National Wetland Inventories

12th Sept 2024, Professor Dan Friess, Tulane University, dfriess@tulane.edu

Introduction

In this session we will:

- Highlight the breadth of data and approaches you can use/create
- Show some examples of data sources
- Introduce some modelling approaches already existing/that you can apply

Things to think about as we go through:

- These slides are a list of potential data sources, designed for you to look back at later
- Think about what is suitable for your national context
- Some of these datasets can be used off the shelf
- Some of these approaches need other data to applied to different ecosystems
- Some of these approaches could be redone for your national context, but it gives you a framework to use

There are a lot of data out there!*

* For mangroves

This presentation will be very mangrove-heavy…

It all hinges on one map

Giri et al. 2011. **Global Ecology and Biogeography** 20, 154-159.

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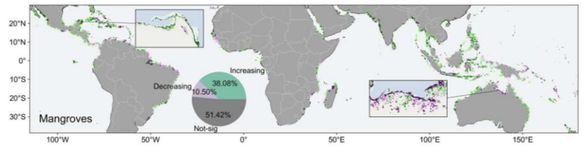
GROSS PRIMARY PRODUCTIVITY



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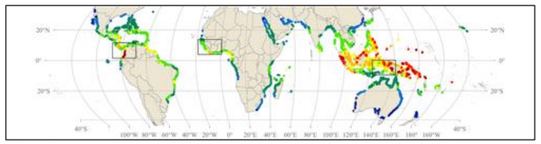
BIOMASS AND TREE HEIGHT



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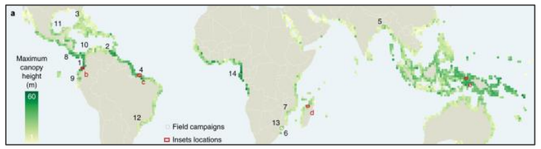

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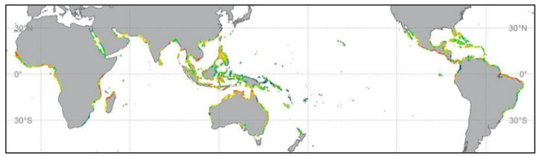

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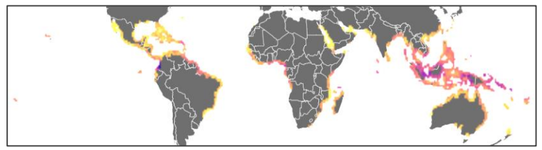

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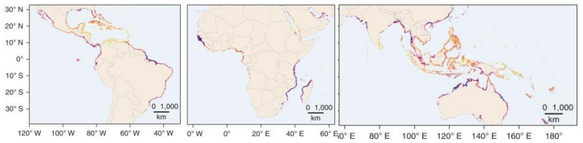
SOIL CARBON



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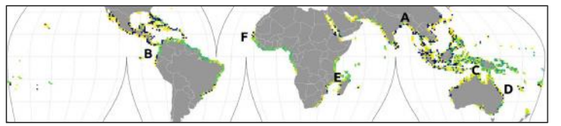

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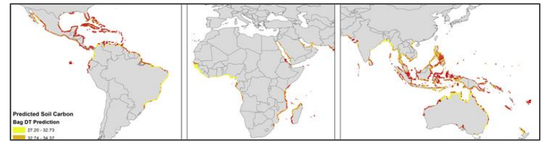

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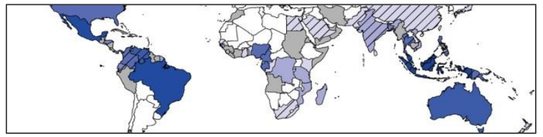

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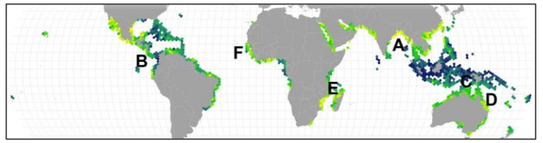

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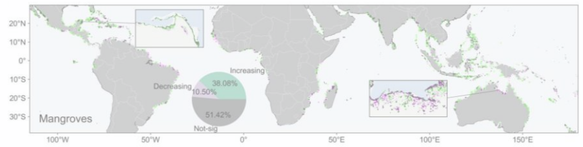

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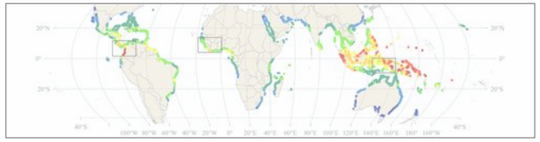
BIOMASS AND TREE HEIGHT



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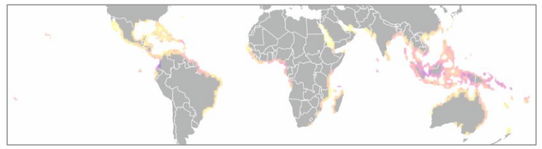

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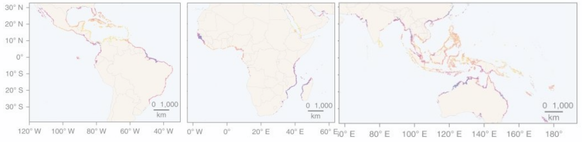

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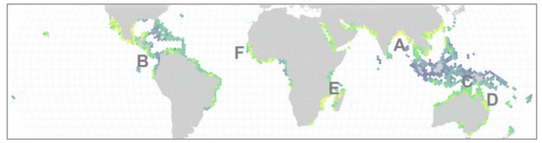

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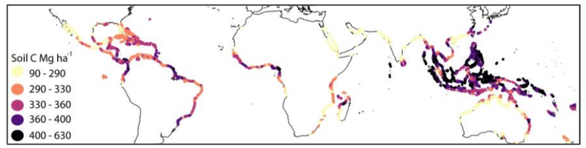
CARBON LOSS



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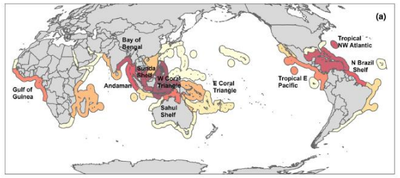

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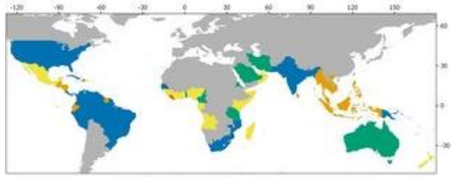
DRIVERS OF CHANGE



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RATES OF CHANGE

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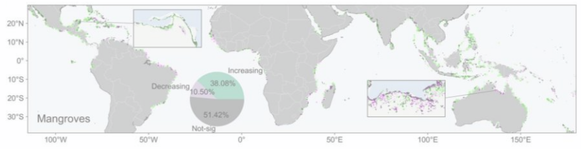

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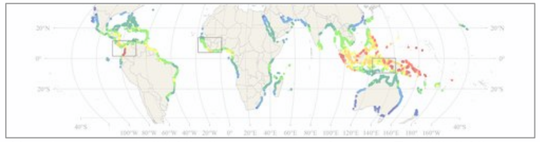

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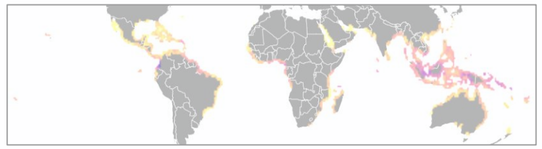

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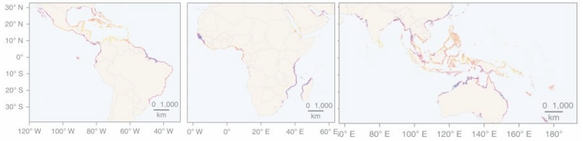

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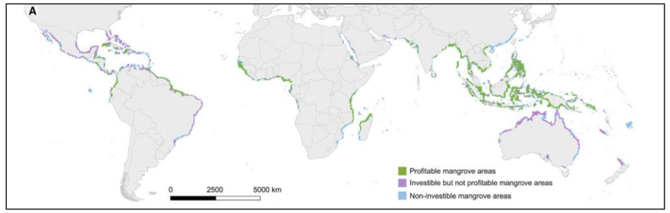
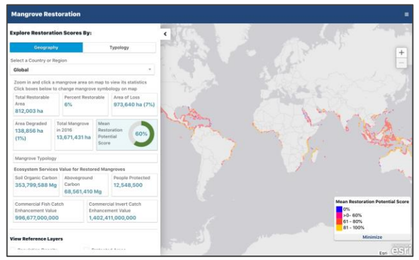
CONSERVATION AND RESTORATION POTENTIAL

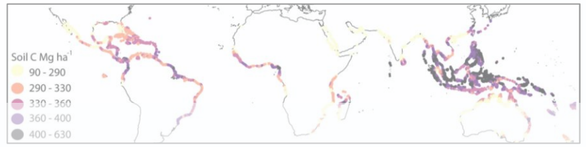


Zeng et al. 2022. **Current Biology** 31, 1737-1743.



Worthington et al. *in rev.*

CARBON LOSS



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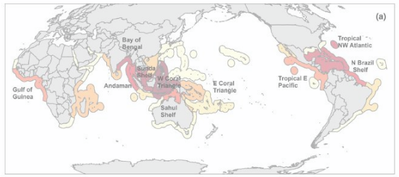

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DRIVERS OF CHANGE

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RATES OF CHANGE

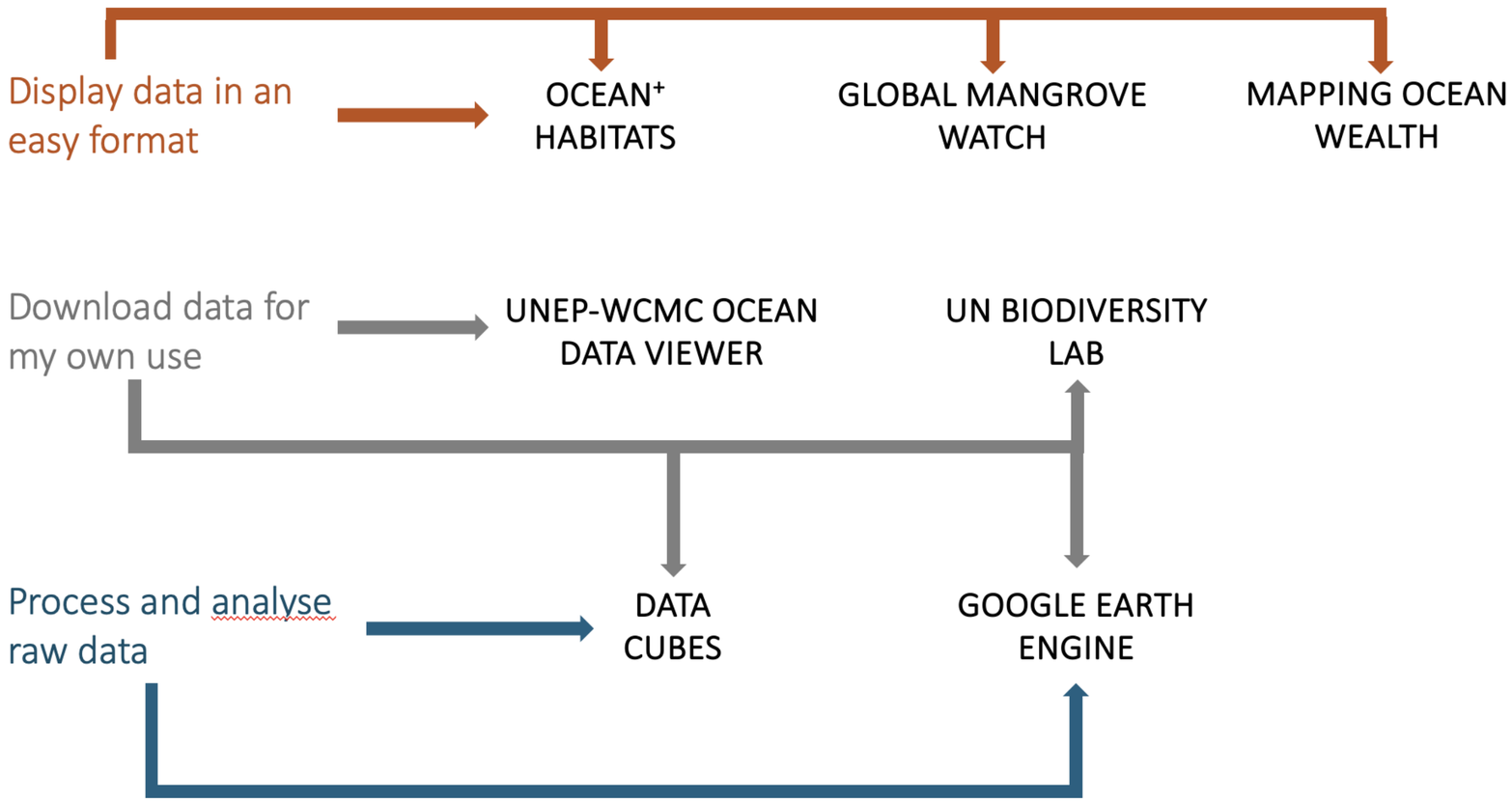
But other coastal ecosystems are catching up

We now have a global map of tidal marshes, and a map of supratidal forests is on its way (but seagrasses are still lagging, and for many other marine/coastal wetlands we have no maps at all), so we can do many of the same things now

And the following slides are still examples of approaches you can use for coastal (and inland) wetlands that you can adapt if you have national spatial data for other ecosystems

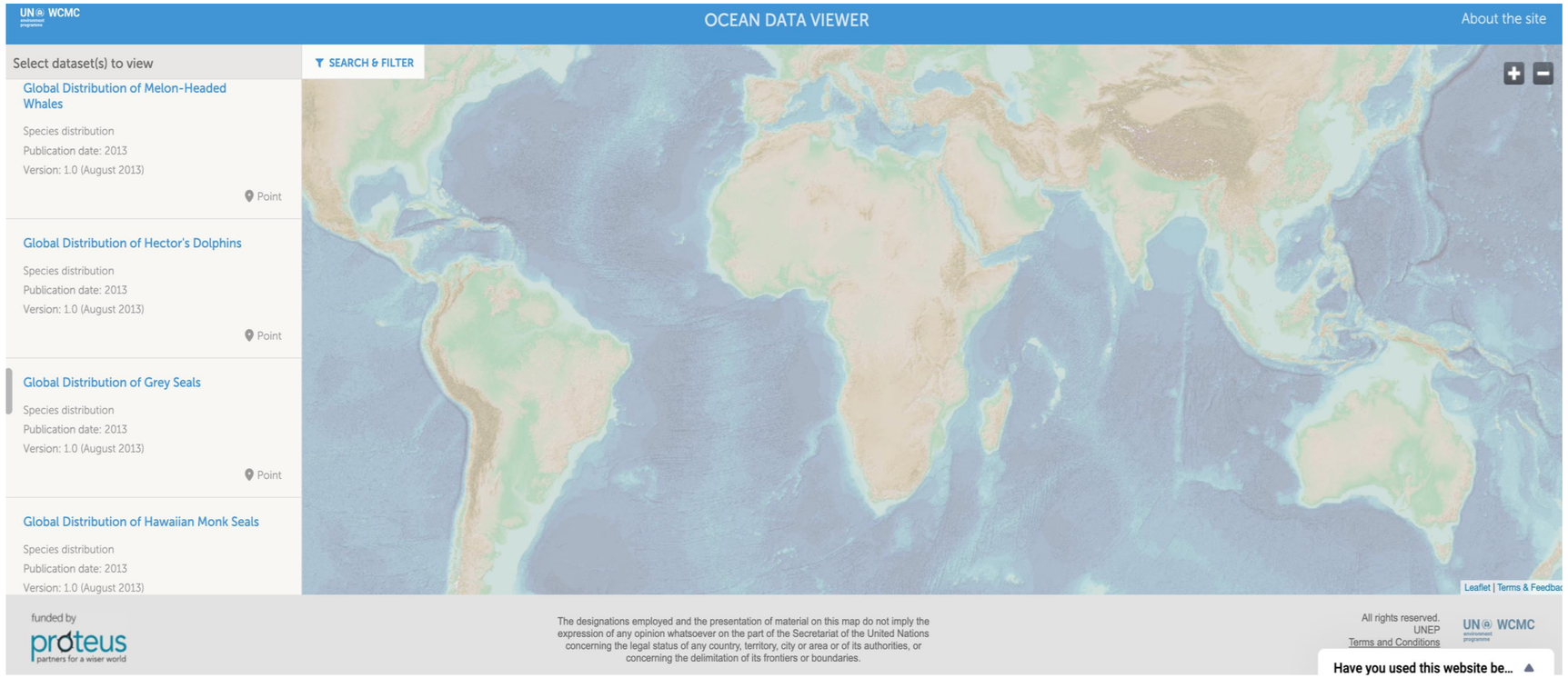
There are plenty of data warehouses

I want to…



UNEP-WCMC Ocean Data Viewer

www.data.unep-wcmc.org
https://data-gis.unep-wcmc.org/



PROS

- Lots of data!
- Most are downloadable as GIS files
- Lots of ecosystems!
- Biophysical, as well as ecological data

CONS*

- Datasets are quite dated

* Personal view, not Ramsar Convention on Wetlands!

UN Biodiversity Lab

www.unbiodiversitylab.org

PROS

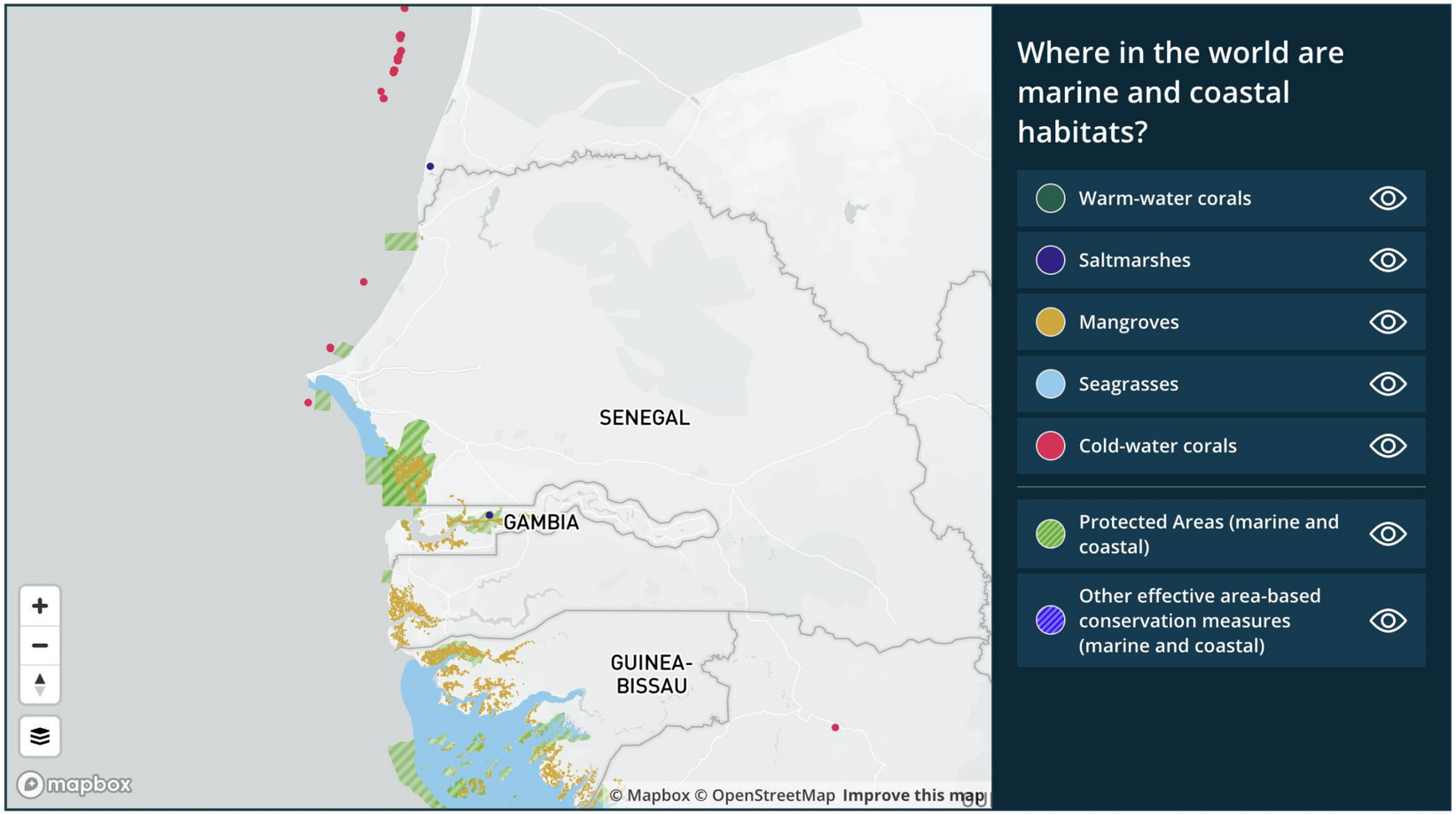
- Even more data!
- Most are downloadable as GIS files
- Lots of ecosystems!
- Much more up to date
- Sorts data by research question

CONS

- Not all data downloadable, or easy to find

Ocean+ Habitats

www.habitats.oceanplus.org



PROS

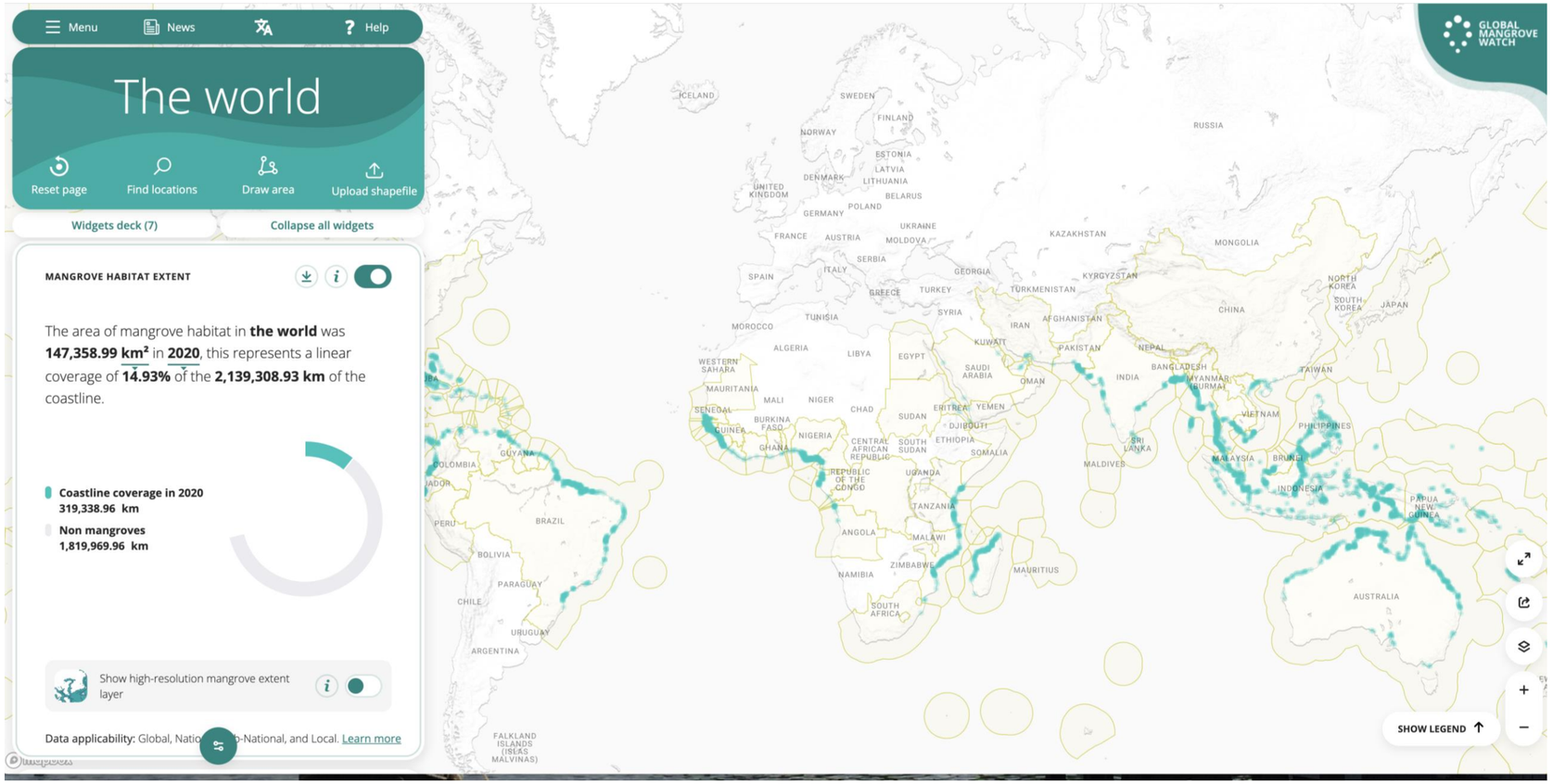
- Great data dashboard and syntheses per country
- Great communication tool
- Species level information (IUCN Red List)

CONS

- Broad ecosystems only
- Limited data

Global Mangrove Watch

www.globalmangrovewatch.org



PROS

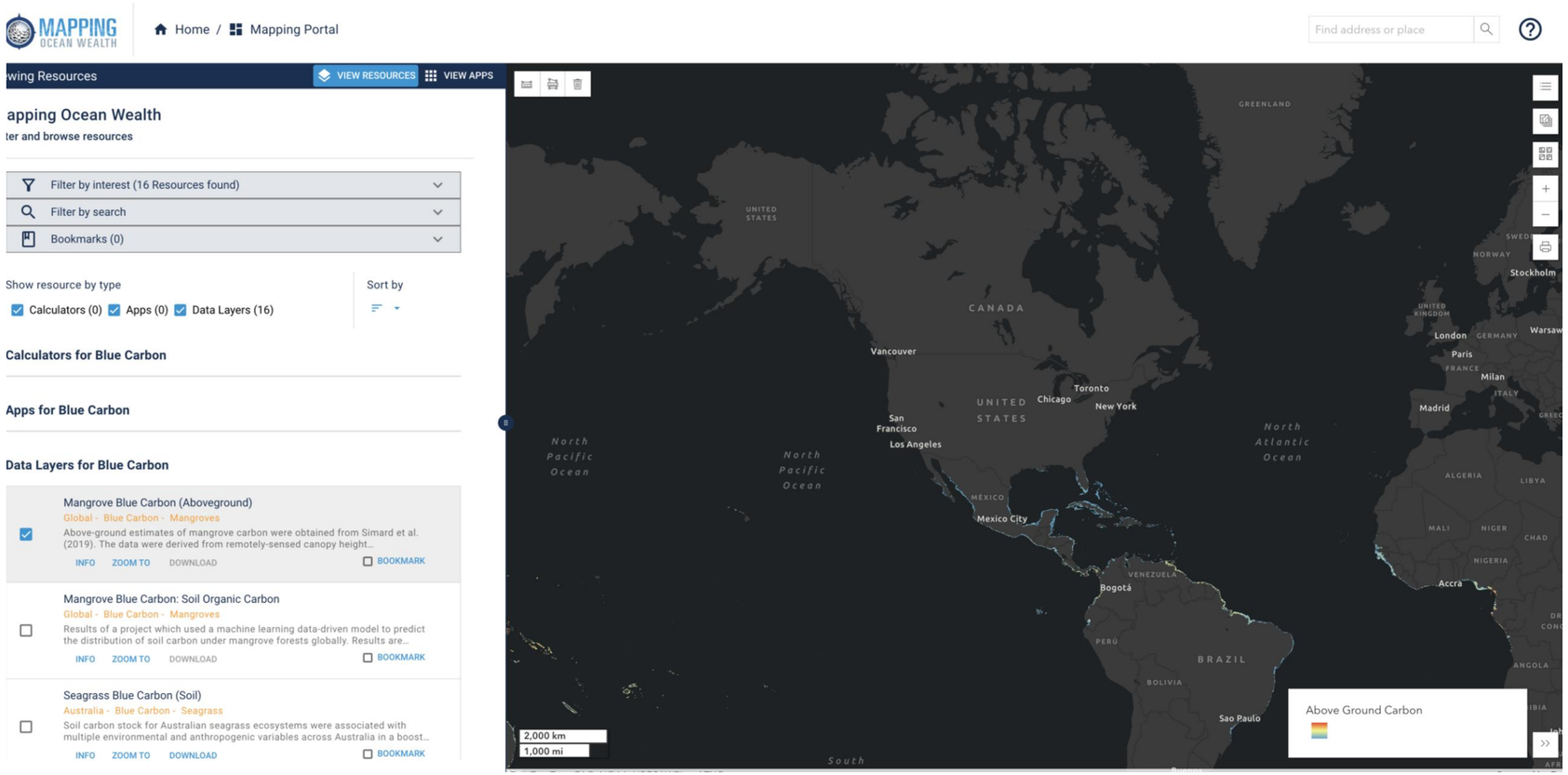
- Great widgets
- Can do custom areas
- Can do calculations
- Deforestation alerts
- Very up to date
- Can upload your own data

CONS

- Mangroves only

Mapping Ocean Wealth

https://maps.oceanwealth.org/#/data



PROS

- Really interesting data layers e.g., ecosystem services
- Can do some calculations

CONS

- Lots of different ‘apps’ can be confusing
- Not all data can be downloaded
- Focused on a few ecosystems

Clarke Labs

https://www.aquaculture.earth/coastal/index.html

PROS

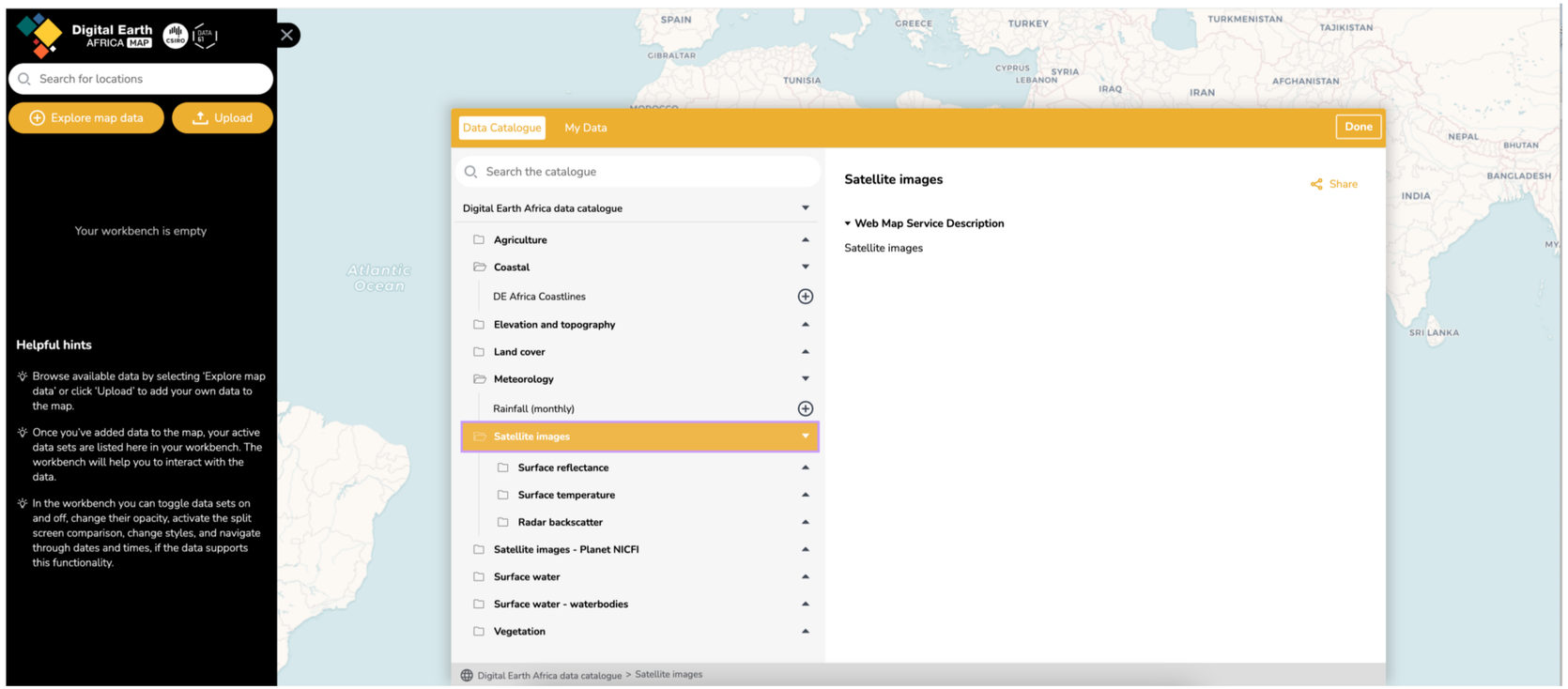
- Some unique datasets

CONS

- Narrow focus
- Not global coverage

Data Cubes

Open source data library and platforms for display and analysis of complex spatial data
e.g., Open Cube, Digital Earth Africa https://maps.digitalearth.africa/



PROS

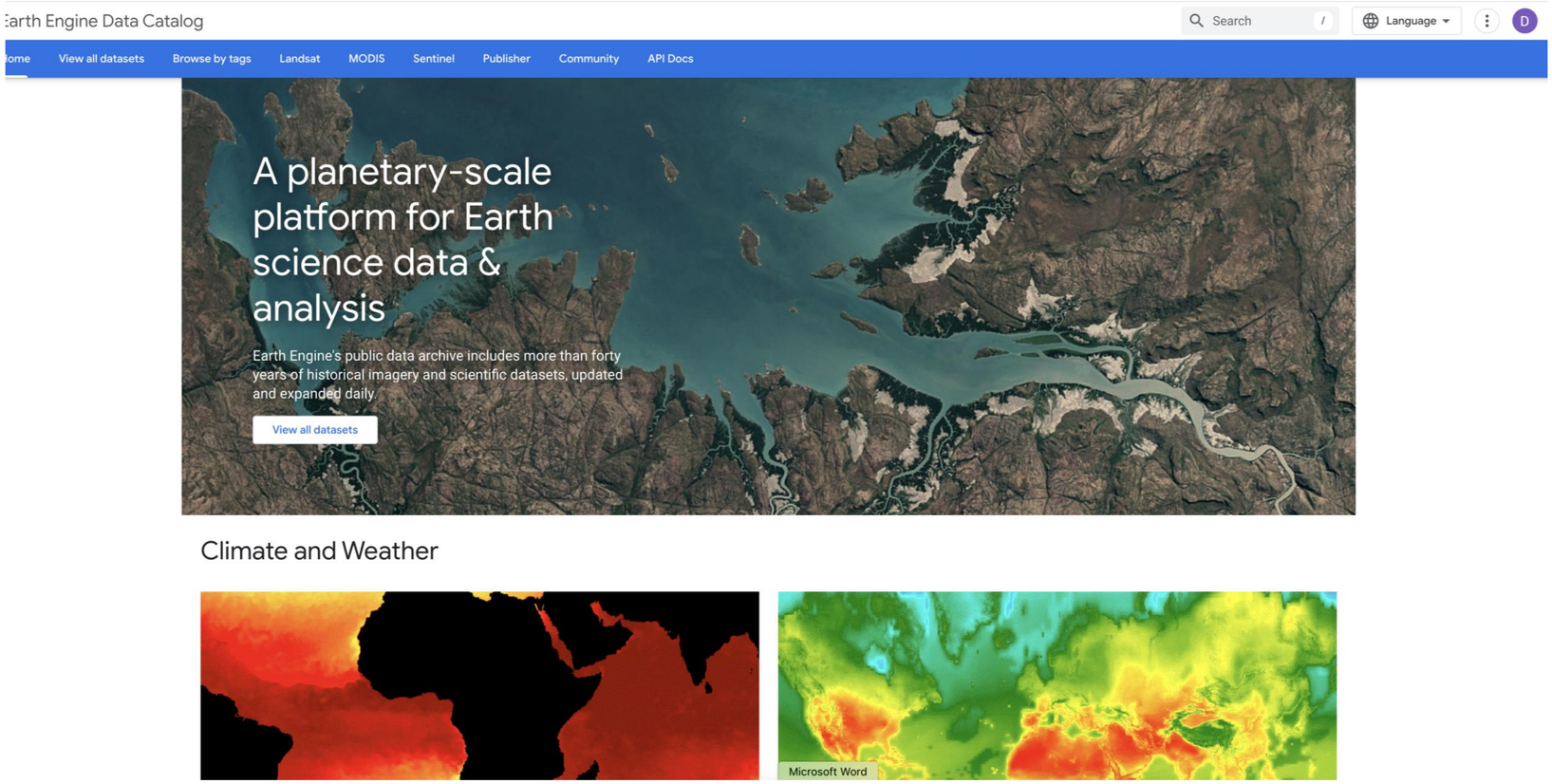
- Powerful tool for analysis
- Lots of different datasets

CONS

- Not global coverage

Google Earth Engine

https://developers.google.com/earth-engine/datasets/



PROS

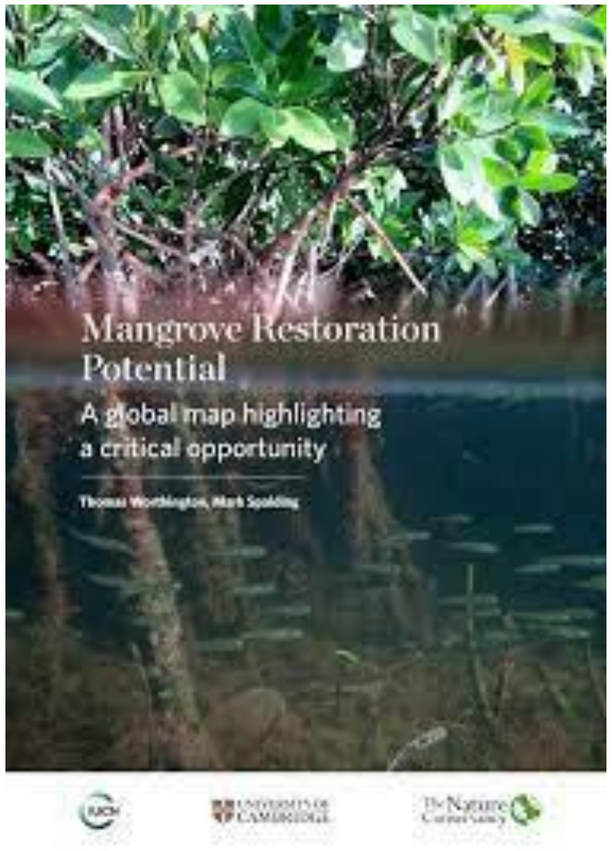
- The ultimate data cube
- It has EVERYTHING
- Powerful tool for data processing and analysis

CONS

- Needs some remote sensing knowledge

Habitat restoration potential

https://maps.coastalresilience.org/mangrove-restoration/



nature ecology & evolution

Article

https://doi.org/10.1038/s41559-022-01926-5

Challenges and opportunities for achieving Sustainable Development Goals through restoration of Indonesia's mangroves

Received: 21 October 2021

Accepted: 7 October 2022

Sigit D. Sasmito[1,2,10,11] ✉, Mohammad Basyuni[3,4,10,11] ✉, Age Kridalaksana[5], Meli F. Saragi-Sasmito[6], Catherine E. Lovelock[7] & Daniel Murdiyarso[8,9]

Uses spatial data of biophysical factors important for (mangrove habitat growth)

Global, regional (Asia), nations (Indonesia)

Could be created for any habitat if you have sufficient data

A note of caution!

Global data aren’t always suitable for national-scale use. Make sure it fits your purpose!

- Spatial resolution
- Ecosystem definitions
- Time periods (e.g., does it fit the timescale you need for national GHG reporting?)

Global data need cross-check and validation with national data sources

Global data are often more suitable for *inter-country* comparison (a scale above NWI)

Tulane University

THE MANGROVE LAB

Thank you

Questions?

Dan Friess
dfriess@tulane.edu