

# ForestBench

Equitable Benchmarks for  
Monitoring, Reporting, and Verification of  
Nature-Based Solutions with Machine Learning

Lucas Czech, Björn Lütjens, David Dao



Location  
Mato Grosso, Brazil

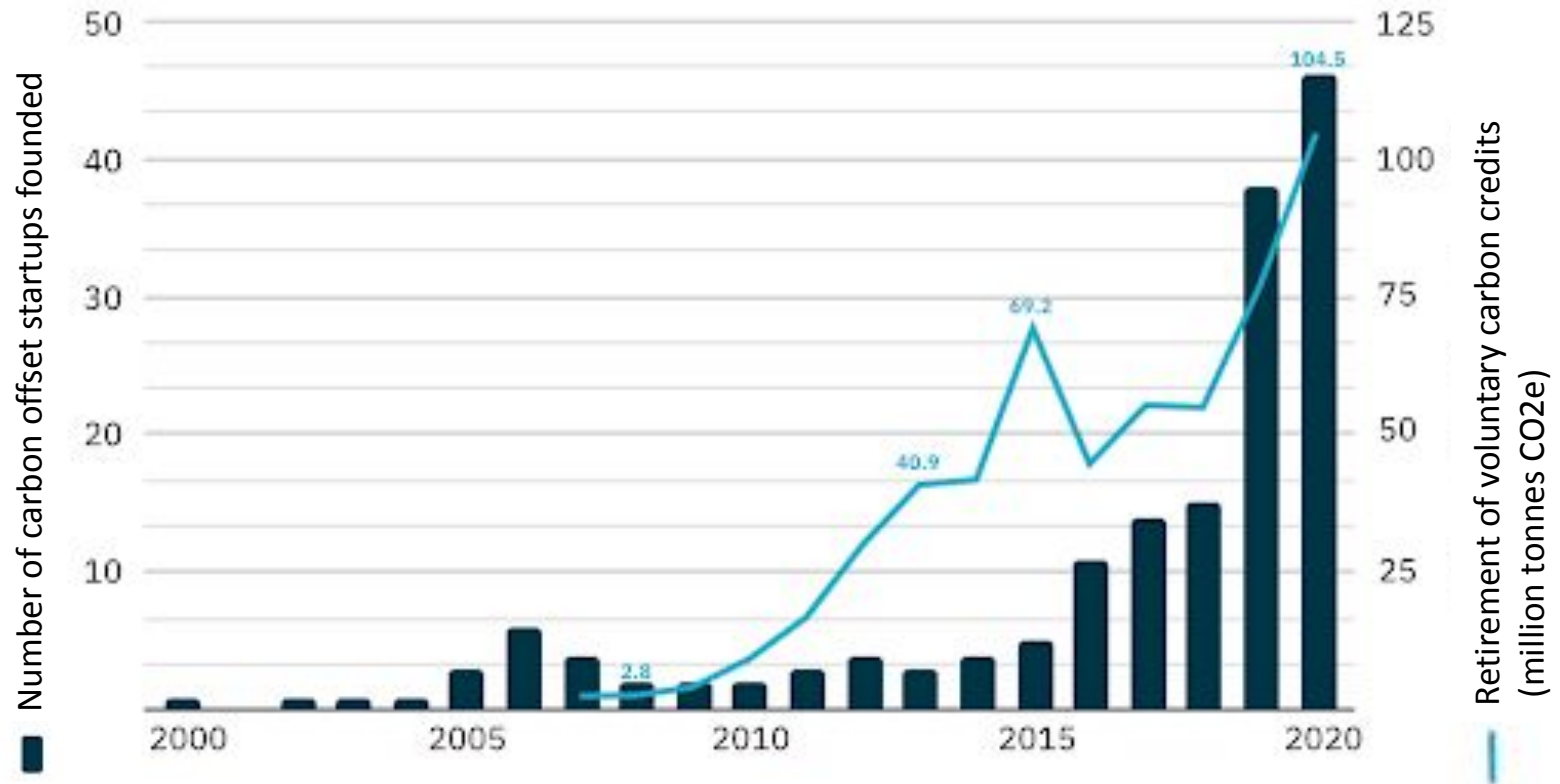
1984

**“The natural world is deteriorating  
in rates unparalleled in human history”**

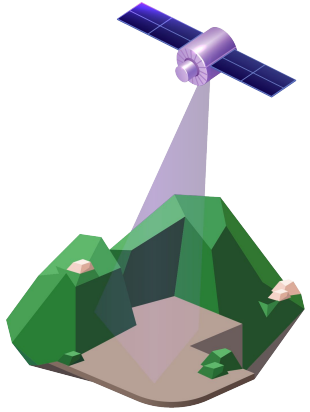
*The Intergovernmental Science-Policy Platform  
on Biodiversity and Ecosystem Services*

Google Earth

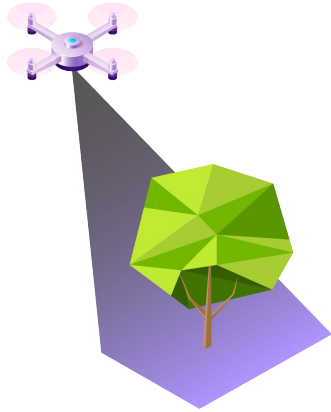
# Explosion of interest in carbon credit



# Forest data collection



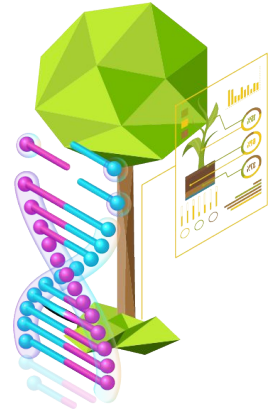
Satellite-based monitoring



Drone-based monitoring



Field-based monitoring

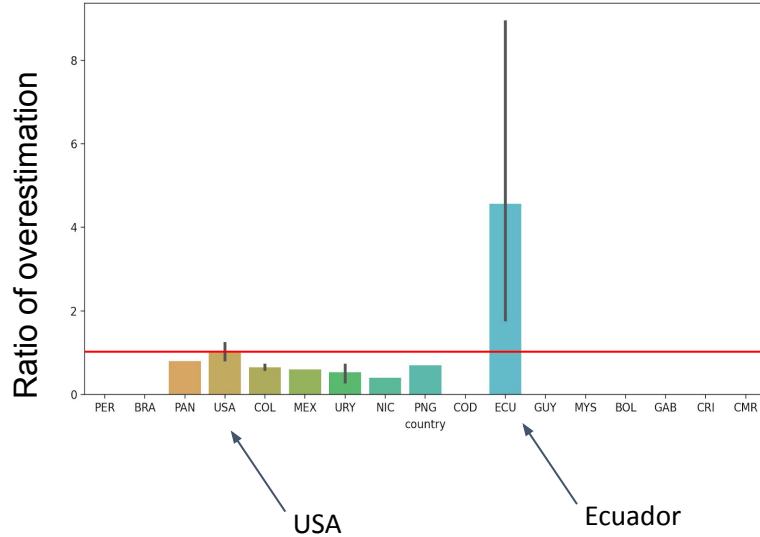


Genome monitoring

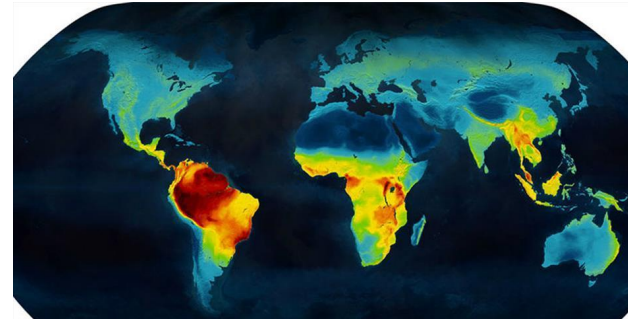
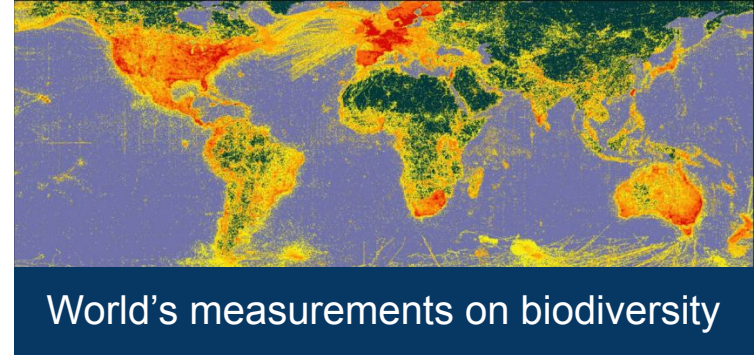
Scalability

Resolution

# Satellite-based estimates of biomass significantly underperform - unfairly by region



Over/Underestimation of Carbon



# ForestBench - Project Goals

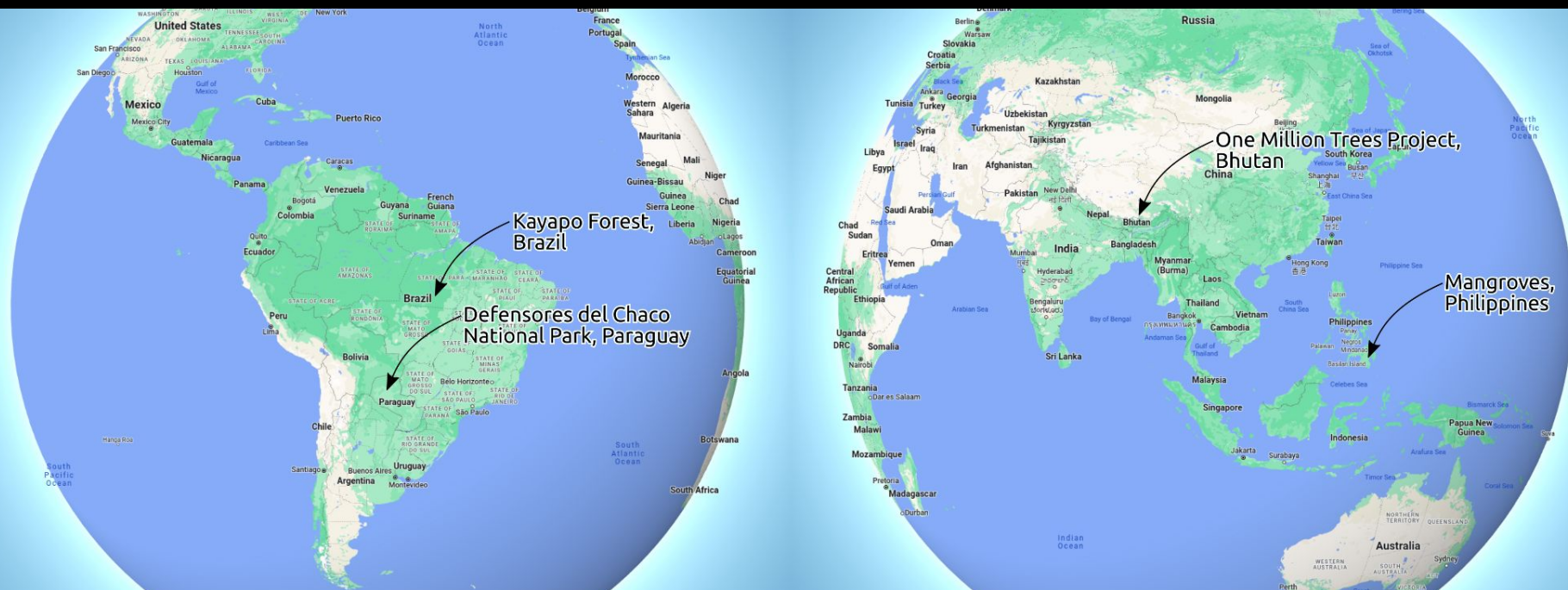
## Our mission:

To collect gold-standard **benchmark data** for scalable assessment **of carbon stock estimates** of small site projects **in the Global South**.

## Our vision:

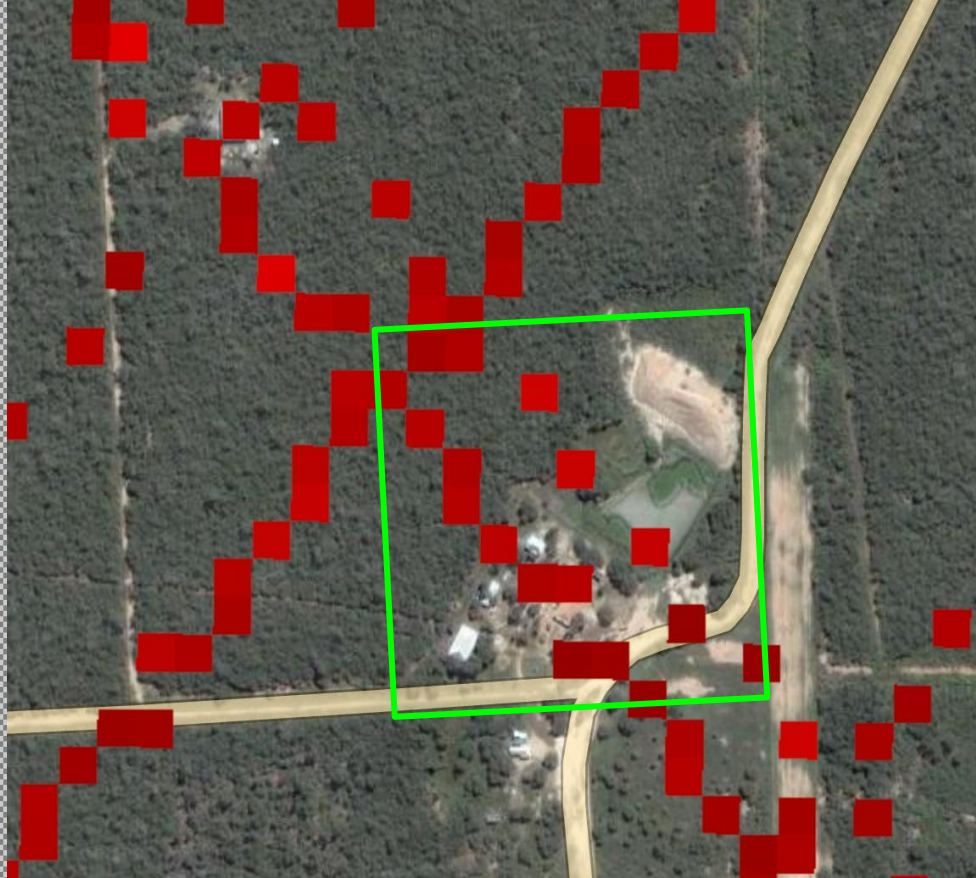
To support local communities and Indigenous peoples in the Global South, by providing access to technology and equitable participation in efforts to save their forests.

# ForestBench Project Sites (expanding)



Collection in progress in Mangroves, Rainforests, at High Elevation:  
15,000+ trees, ~20 hectares of orthomosaics, and growing!

# Orthomosaic and GEDI Satellite - Paraguay



# Data collection in the Philippines



Images by Camille Rivera

# Data collection with the Kayapo



# ForestBench - Social Impact

## Measure-to-Earn:

- We currently are paying local communities 30 cents per data point, and educating on the value of standing forests.

## Transparency leads to donations:

- We will live-update the collected data points.
- Partner organisations reported additional donations due to data availability.

# Acknowledgements

This work would not be possible without our partners



CARNEGIE  
SCIENCE



Stanford  
University

