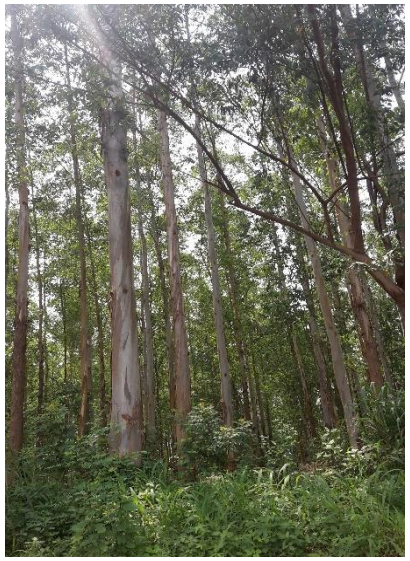
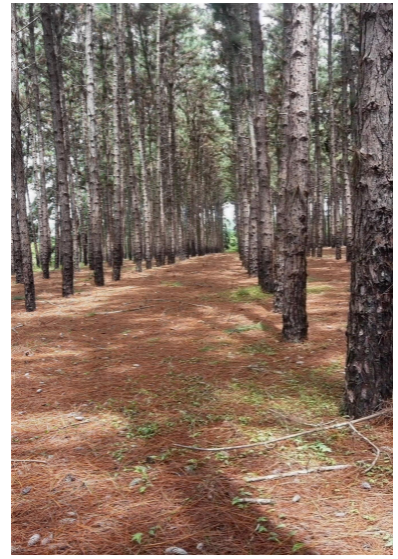


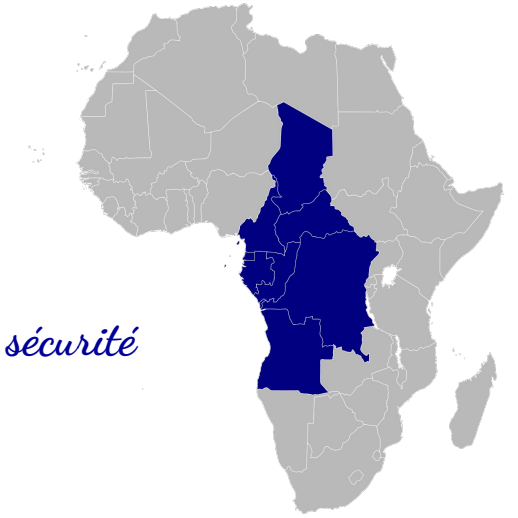




Initiatives existantes en Afrique Centrale

Lydie-Stella Koutika
CRDPI, Congo

Co-Présidente du Panel Scientifique pour le Bassin du Congo (SPCB)

Membre du comité scientifique et technique de l'Initiatives '4 per 1000 ' les sols pour la sécurité alimentaire et le Climat



In February 2023, scientists from across central Africa convened with their international partners in Gabon. They agreed to form

two new dedicated initiatives

that put the people, climate, forests, and biodiversity of the Congo Basin at the heart of their efforts:

Pursuing complementary objectives, they are based on shared values, work towards shared goals for the region, and coordinate closely.

Two initiatives, one shared vision

Congo Basin Science Initiative

Science Panel for the Congo Basin

INITIATIVE SCIENCE POUR LE BASSIN DU CONGO

- Une **plateforme indépendante** pilotée par des scientifiques qui plaide pour **l'investissement à long terme** dans la science du bassin du Congo.
- **Rassemble des scientifiques de la région**, des acteurs du monde scientifique et d'autres partenaires afin de promouvoir et de coordonner les **opportunités d'investissement dans la science** du bassin du Congo.
- Une **entité de coordination, qui met en réseau, coordonne et facilite**. Il ne détient pas de financements majeurs.

LE PANEL SCIENTIFIQUE POUR LE BASSIN DU CONGO

- Une initiative **indépendante dédiée à la synthétisation des connaissances existantes** sur le fonctionnement du système du bassin du Congo, et les menaces pesant sur lui.
- **Dirigé par des chercheurs éminents de la région**, vise à entreprendre une synthèse des connaissances scientifiques disponibles sur le Bassin du Congo, y compris les connaissances des peuples autochtones, afin de produire un rapport d'évaluation indépendant de haute qualité lors de la COP30.
- Vise à **informer et à accélérer les solutions locales et régionales** pour la conservation et le développement durable.

Science Panel for the Congo Basin

Panel Scientifique pour le Bassin du Congo

Science Panel for the Congo Basin

Inspired by the scientific Panel for the Amazon.

An independent scientific panel, led by scientists from the region launched December 3 2023, COP28, Dubai.

Its main mission is to synthesize existing knowledge and identify research gaps on the status of, and threats to, the Congo Basin, its forests and related ecosystems.

The Panel is convened under the auspices of the United Nations Sustainable Development Solutions Network (SDSN).

Science Panel for the Congo Basin

Scientific Steering Committee

24 of the region's leading scientists on the Congo Basin, across different academic disciplines, involving and supportive of early-career scientists, building on autochtone knowledge and perspectives

SPCB Organization

Co-Chairs

Raphaël M. Tshimanga
DRC

Lydie-Stella Koutika
Republic of Congo

Bonaventure Sonké
Cameroon

Secretariat at SDSN

New York Office

Emma Torres, Strategic Coordinator

Lila Potter, Program Associate

Paris Office

Cecil Haverkamp, Director FELD Programme

Rachel Collie, FELD Catalyst

Kinshasa, DRC

Bila-Isia Inogwabini, Science Officer

Science Panel for the Congo Basin

SUSTAINABLE DEVELOPMENT SOLUTIONS NETWORK
A GLOBAL INITIATIVE FOR THE UNITED NATIONS

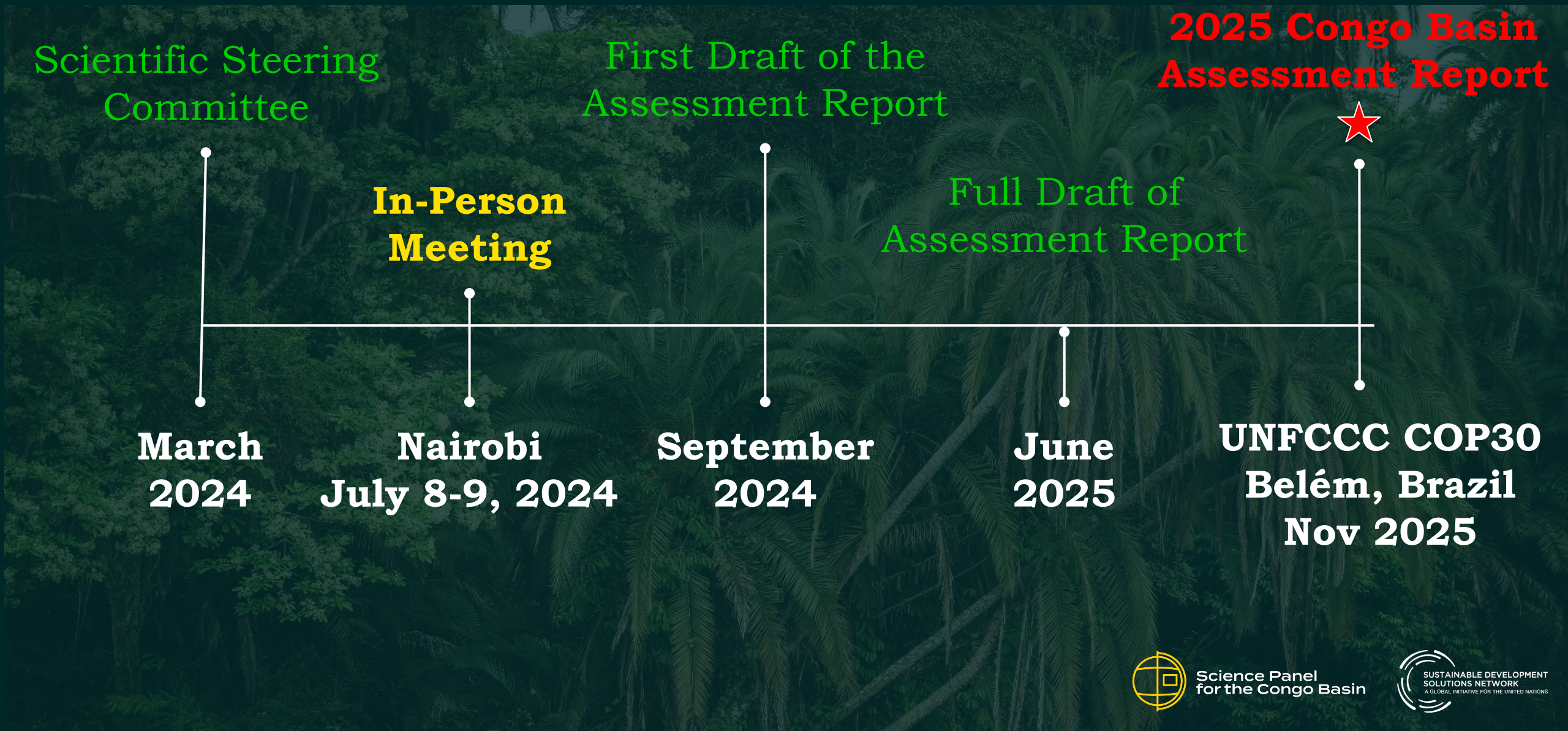
SPCB achievements

- Core team meeting in Brazzaville, Oct 2023 (2nd Summit of the 3 Bassins)
- Secured initial 2-year funding from the Bezos Earth Fund
- Website and newsletter being developed
- SPCB/CBSI Side Event at the Congo Basin Forest Partnership, Kinshasa, DRC, June 5, 2024
- Draft Framework of the 2025 Assessment Report, involving more than 100 scientists from/on the region
- Scientific Steering Committee, incl in-person meeting in Nairobi 8-9th July 2024

Science Panel for the Congo Basin

SUSTAINABLE DEVELOPMENT SOLUTIONS NETWORK
A GLOBAL INITIATIVE FOR THE UNITED NATIONS

SPCB timeline and next steps



Science Panel for the Congo Basin

SUSTAINABLE DEVELOPMENT SOLUTIONS NETWORK
A GLOBAL INITIATIVE FOR THE UNITED NATIONS

2025 Assessment Report

Section 1	**How the Congo Basin ecosystems function regionally, and their Influence on the changing earth system.**
Section 2	**The Impact of global, regional, and local human activity on the ecosystems of the Congo Basin.**
Section 3	**The prospective biodiversity, ecosystems and climate of the Congo Basin.**
Section 4	**How can scientific data and research inform climate-resilient sustainable land-use, including to address poverty and achieve sustainable development across the region?**

Science Panel for the Congo Basin

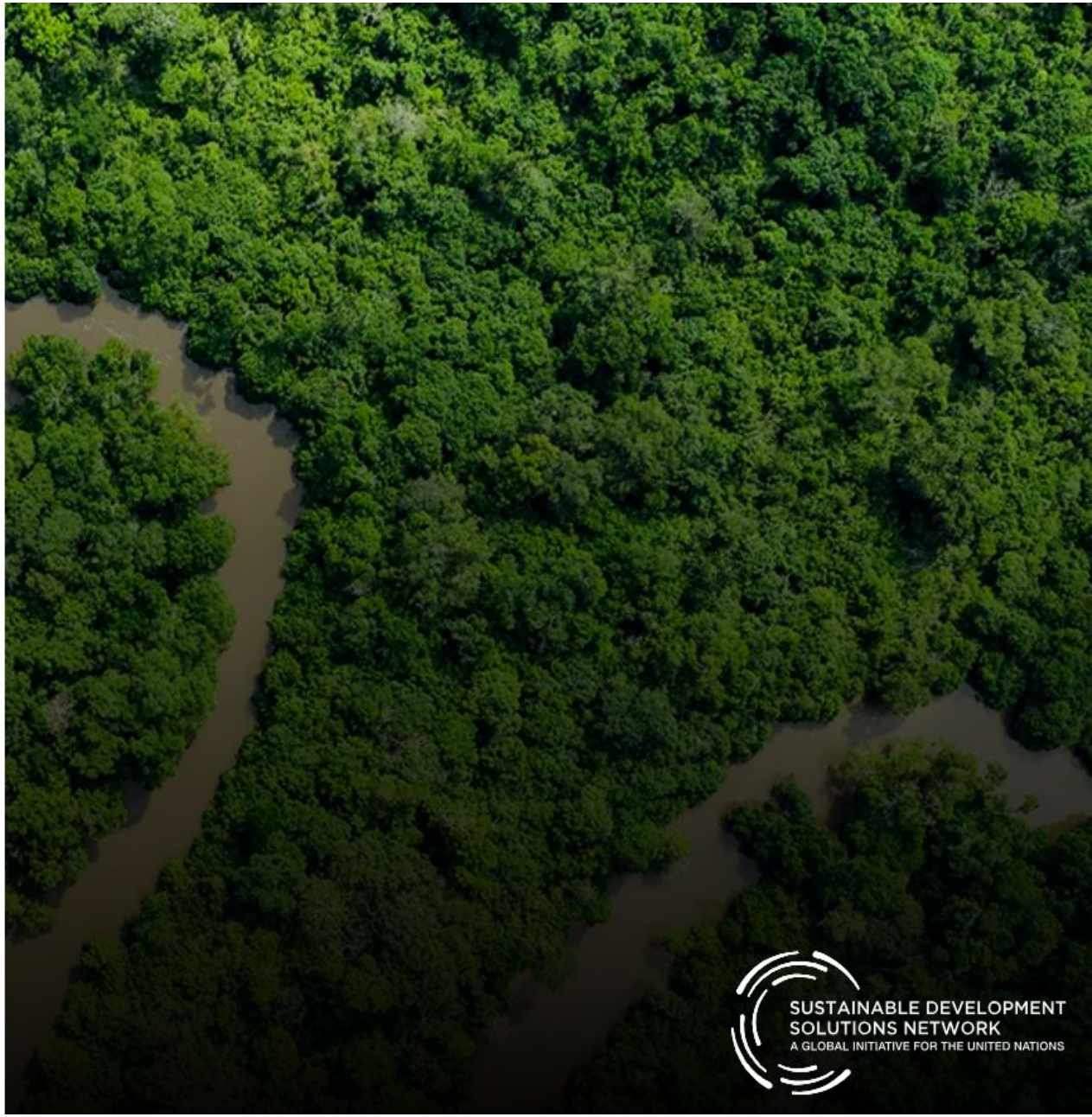
The Science Panel for the Congo Basin (SPCB) was launched on 3rd December 2023, at COP28 in Dubai. The SPCB is an independent platform for scientists from the region to synthesize the existing knowledge including Indigenous peoples and autochthonous knowledge, on the functioning of, and threats to, the Congo Basin and its ecosystems. More information about the Panel is detailed in the below press release.

- ▸ PRESS RELEASE FOR THE LAUNCH OF THE SCIENCE PANEL
- ▸ ABOUT THE SCIENCE PANEL FOR THE CONGO BASIN
- ▸ THE TEAM

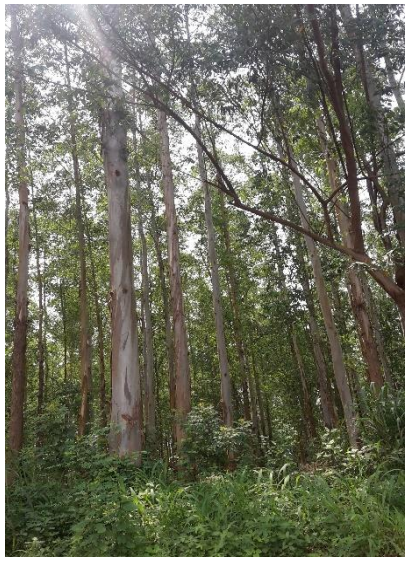
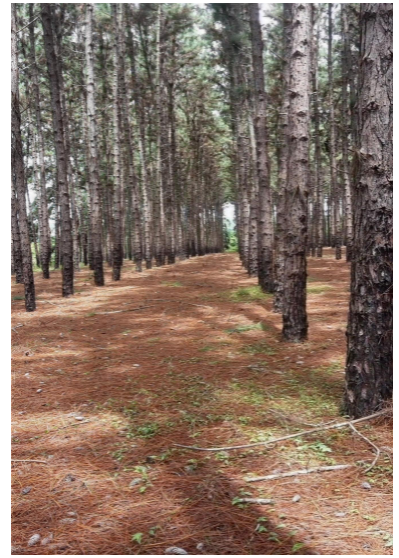
For any questions or to express your interest in getting involved with the Science Panel for the Congo Basin, please email spcb@unsdsn.org.

Panel Scientifique pour le Bassin du Congo

Le panel scientifique pour le bassin du Congo (SPCB) a été lancé le 3 décembre 2023 lors de la COP28 à Dubaï. Le SPCB est une initiative inédite dédiée à la synthétisation des connaissances existantes sur le fonctionnement du système du bassin du Congo, et les menaces pesant sur lui. Pour plus d'informations, veuillez vous référer au communiqué de presse ci-dessous.





Initiatives existantes en Afrique Centrale

Prof. Jean-Joël Loumeto (UNMG) & Lydie-Stella Koutika

Membres du comité de Pilotage de l'Initiative Science pour le Basin du Congo (CBSI)

Congo Basin
Science Initiative

Congo Basin Science Initiative

Research and capacity building to confront the climate and biodiversity crises and promote sustainable development

https://congobasinscience.net | info@congobasinscience.net

Photo credit: Fiston Wasanga /CongoFlux

The Congo Basin is regionally and globally important

Congo Basin Science Initiative

- Call to end under-investment in Congo Basin Science

nature

Setting the agenda in research

Comment

Congo Basin rainforest — invest US$150 million in science

Lee J. T. White, Eve Bazaiba Masudi, Jules Doret Ndongo, Rosalie Matondo, Arlette Soudan-Nonault, Alfred Ngomanda, Ifo Suspense Averti, Cornelille E. N. Ewango, Bonaventure Sonké & Simon L. Lewis

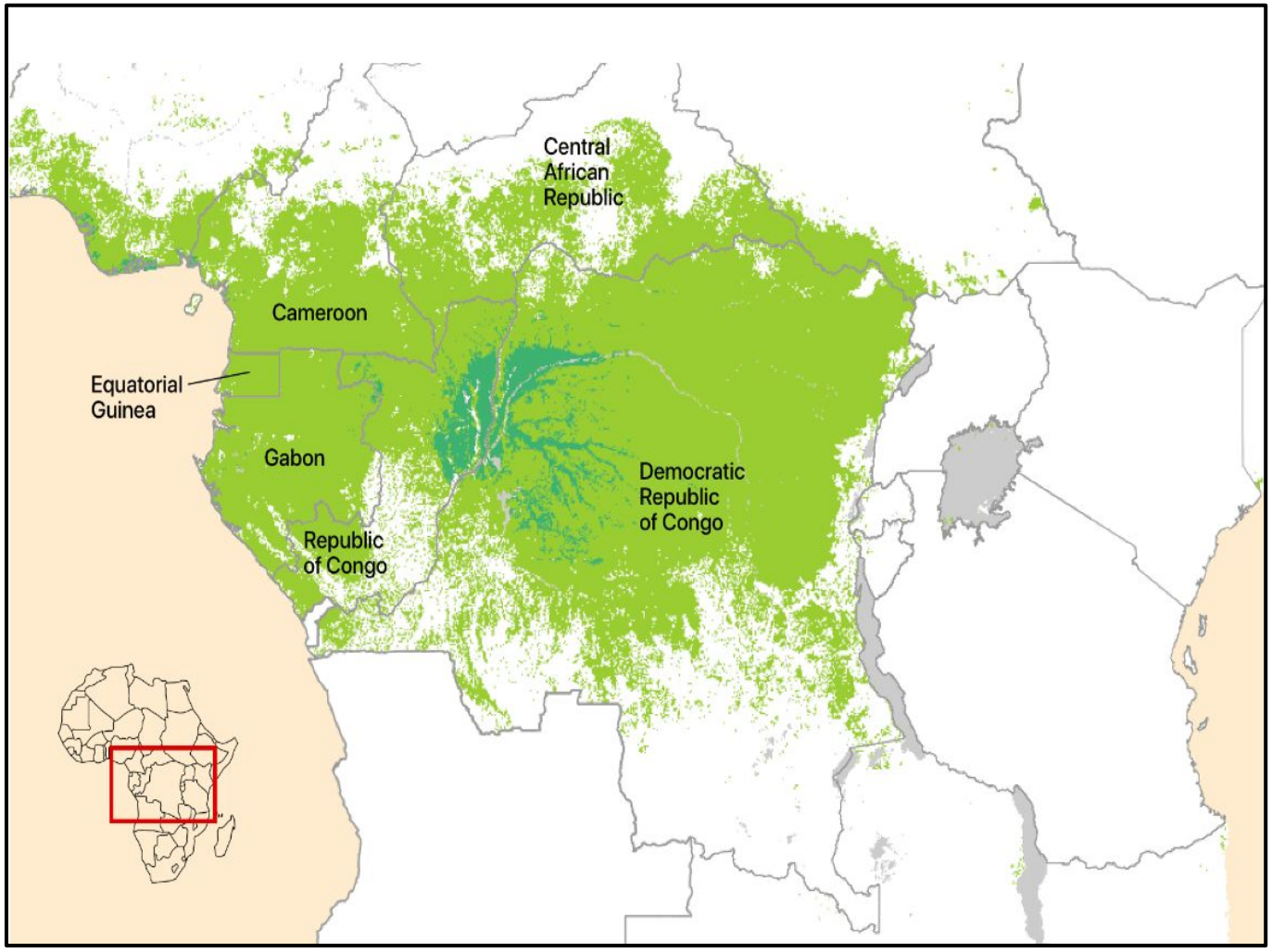
The world's second-largest rainforest is key to limiting climate change — it needs urgent study and protection.

Earth's second-largest expanse of tropical forest lies in central Africa, in the Congo Basin. The region supports the livelihoods of 80 million people. The rainfall that the forest generates as far away as the Sahel and the Ethiopian highlands supports a further 300 million rural Africans. forest's ability to absorb carbon dioxide is slowing as temperatures rise[1]. Deforestation, although lower than elsewhere in the tropics over recent decades, has led to the loss of more than 500,000 hectares of forest in 2019 alone (see go.nature.com/3dnxm9e). Without new policies, this is expected to increase.

Congo Basin Science Initiative responds to the call

Congo Basin Science Initiative

- Large group of scientists, mostly from the region, are working together to plan to deliver:
- An integrated understanding of the Congo Basin in a changing Earth system
- Training for a new generation of scientists
- Scientific evidence for policy makers and civil society that will enable sustainable development
- Inspired by the 10-year $200 million Large Scale Biosphere Atmosphere Experiment in the Amazon
- 120 interlinked projects, trained 7,000 MSc level and PhD level scientists.



Science Plan

Congo Basin Science Initiative

1. How does the Congo Basin function as a regional physical entity in the changing Earth system?

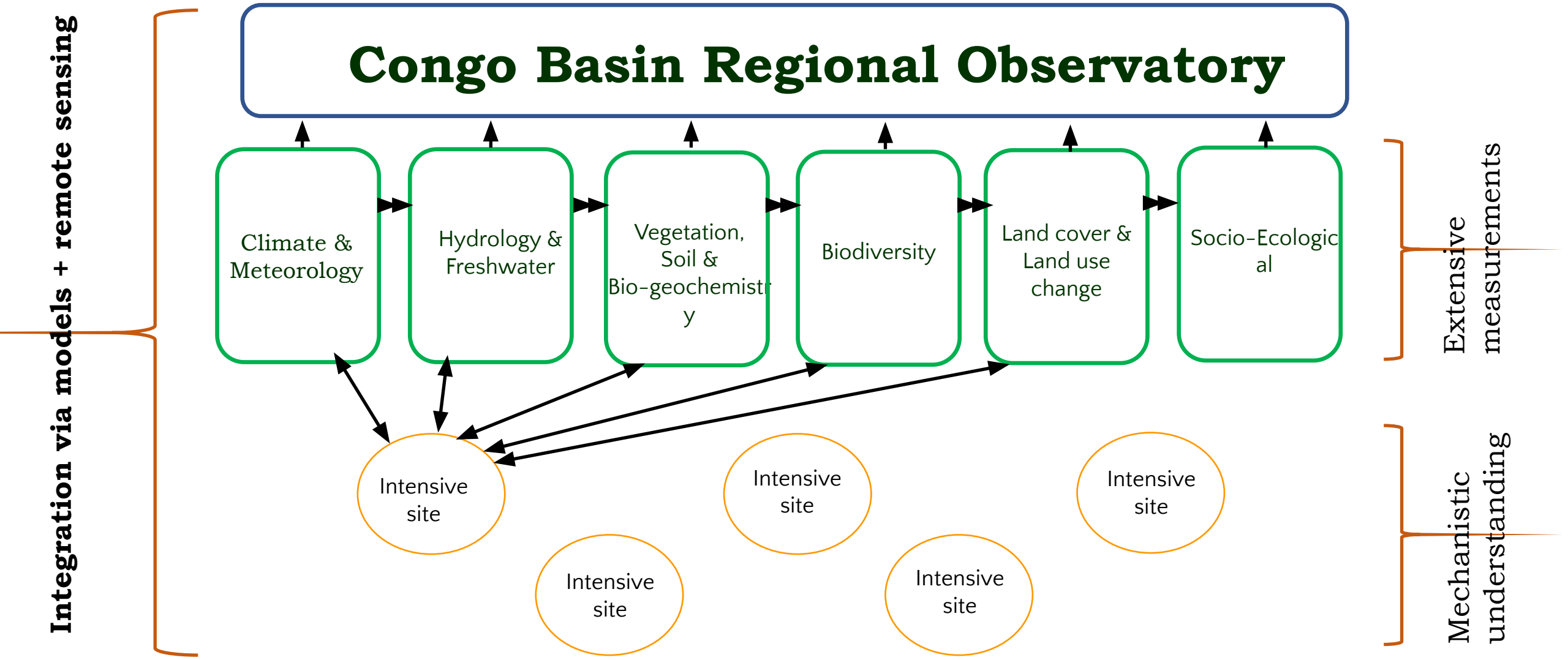
2. How have the ecosystems, biodiversity, and climate of the Congo Basin changed in the past, what is their current status, and how will they change in the future?

3. How do these dynamic ecosystems, their biodiversity, and the climate of the Congo Basin interact with global, regional and local human activity?

4. How can scientific data best inform climate-resilient sustainable land-use to improve health, eradicate poverty, increase economic prosperity, and achieve other sustainable development goals across the region?

Science Plan

Congo Basin Science Initiative



Capacity Building Plan

Congo Basin Science Initiative

Goal

Increase scientific capacity

↳ Enhancing existing partnerships and building new ones

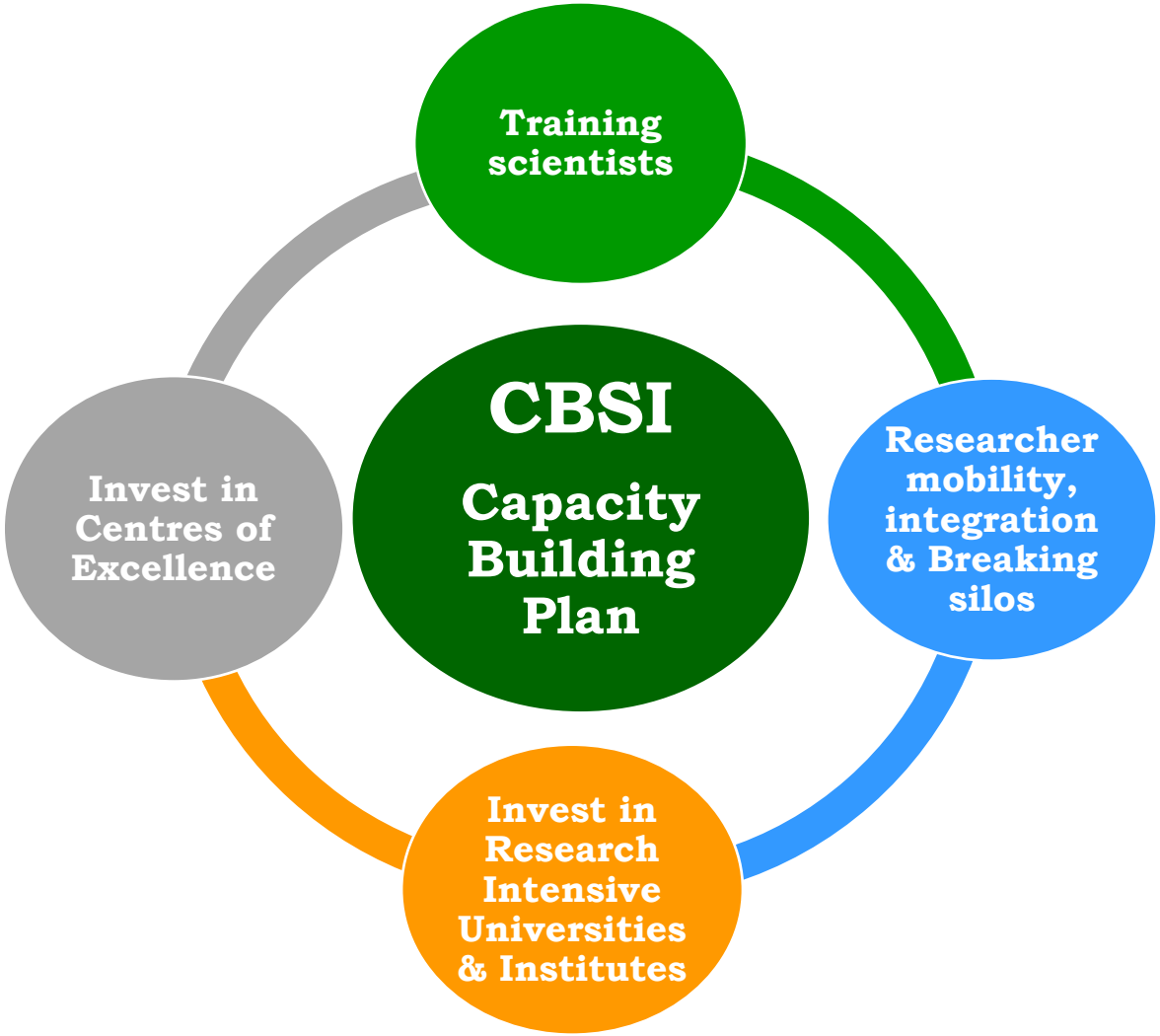
↳ Enabling long-term investment in institutional capacity (training scientists & developing improved career pathway for current and future scientists from the region)

↳ Addressing the unique needs for the region

Capacity Building Plan

Congo Basin Science Initiative

Barriers



Capacity Building Plan

Congo Basin Science Initiative

Solutions

1. Training scientists

↳ Hundred students to Masters and PhD level to become experts in their fields

↳ Students co-create research within the CBSI Science Plan allowing a synergistic win-win, to change our understanding of the Congo Basin *and* train the leaders of the future.

↳ CBSI will focus on gaining funds for training, including global north, 'sandwich PhDs' with time in two countries, and internationally supported local PhD training.

Capacity Building Plan

Congo Basin Science Initiative

Solutions

2. Researcher Mobility, Regional Integration, Breaking Silos

- Annual CBSI network science meetings in the Congo Basin region to resent results to scientists, policy advisors and civil society

- CBSI Early Career Researchers (MSc, PhD, post-doctoral) will have their own conference beforehand to identify their needs, and to raise them at the CBSI meeting

- CBSI meetings engage scientists to improve regional integration, deepen interdisciplinary work, and allow regular updating of the CBSI Science and Training plans

Capacity Building Plan

Congo Basin Science Initiative

Solutions

3. Invest in Research Intensive Universities & Institutes

- Focus investments on research-intensive universities and institutes in the region, as they have good track records, including funds to develop attractive research-led posts.

- Focus investments on opportunities for post-doctoral researchers, since post-PhD research positions rarely exist in central African universities.

- Focus investments, such as research grants, on increasing the autonomy of Lecturers and Professors to allow them to do the research they consider important, and not only doing science that is led by international scientists and their funders.

Capacity Building Plan

Congo Basin Science Initiative

Solutions

4. Invest in Centres of Excellence

- Major investments should be made in Centres of Excellence that are well-equipped to conduct cutting-edge analyses, training and build research capacity

- There should be at least one Centre of Excellence in at least each of the most research intensive Congo Basin countries, DRC, Gabon, Cameroon and the Republic of the Congo

- Centres of Excellence will be funding-dependent and based on the existing strengths of different countries, but each should serve the needs of the region to avoid duplication of effort.

Increasing Investment in Congo Basin Science

Activities since One Forest Summit, March 2023

- Formation of a Scientific Steering Committee, including scientists from DRC, RoC, Cameroon, CAR, Gabon, Equatorial Guinea

- Launch of Congo Basin Science Initiative, at the Summit of the Three Basins, October 2023 in Brazzaville (RoC)

- Launch of the website, Congo BasinScience.net, in French and English, and creation of the bilingual newsletter and mailing list

- Accepted as new member of Congo Basin Forest Partnership (CBFP)

- Discussions with funders, and several funding applications currents being appraised.

With thanks to:

Congo Basin Science Initiative

Wildlife Conservation Society

MONTPELIER FOUNDATION

UNIVERSITY OF LEEDS

SUSTAINABLE DEVELOPMENT SOLUTIONS NETWORK
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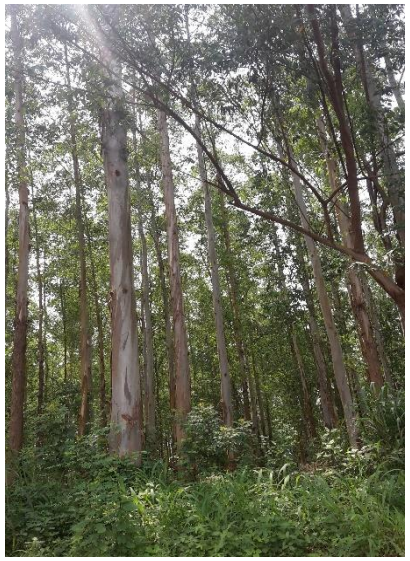
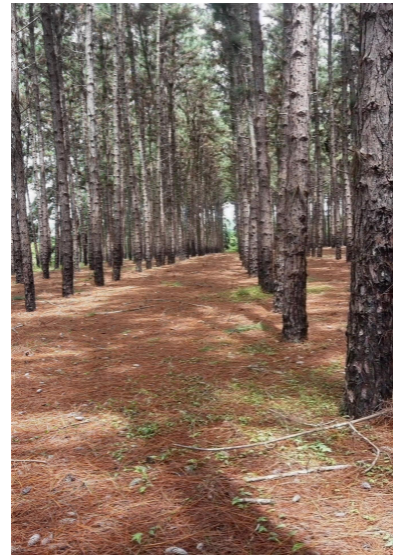
IRD Institut de Recherche pour le Développement FRANCE



Initiatives existantes en Afrique Centrale

Lydie-Stella Koutika

Co-Responsable du Working group «Biogeochemical cycles & carbon dynamics"

Prof. Jean-Joël Loumeto (UNMG)
Membre de PANGEA

PANGEA

PAN tropical investigation of bioGeochemistry and Ecological Adaptation

A scoping study for a NASA Tropical Forest Terrestrial Ecology Campaign

Elsa Ordway – PANGEA PI

NASA Terrestrial Ecology field campaigns are meant to:

a) Answer **big science questions** targeted on **important regions or biomes**;

b) Enable **more effective interpretation and analysis of space-based measurements**;

c) Foster **collaborative interactions** and building **new relationships** within the scientific community;

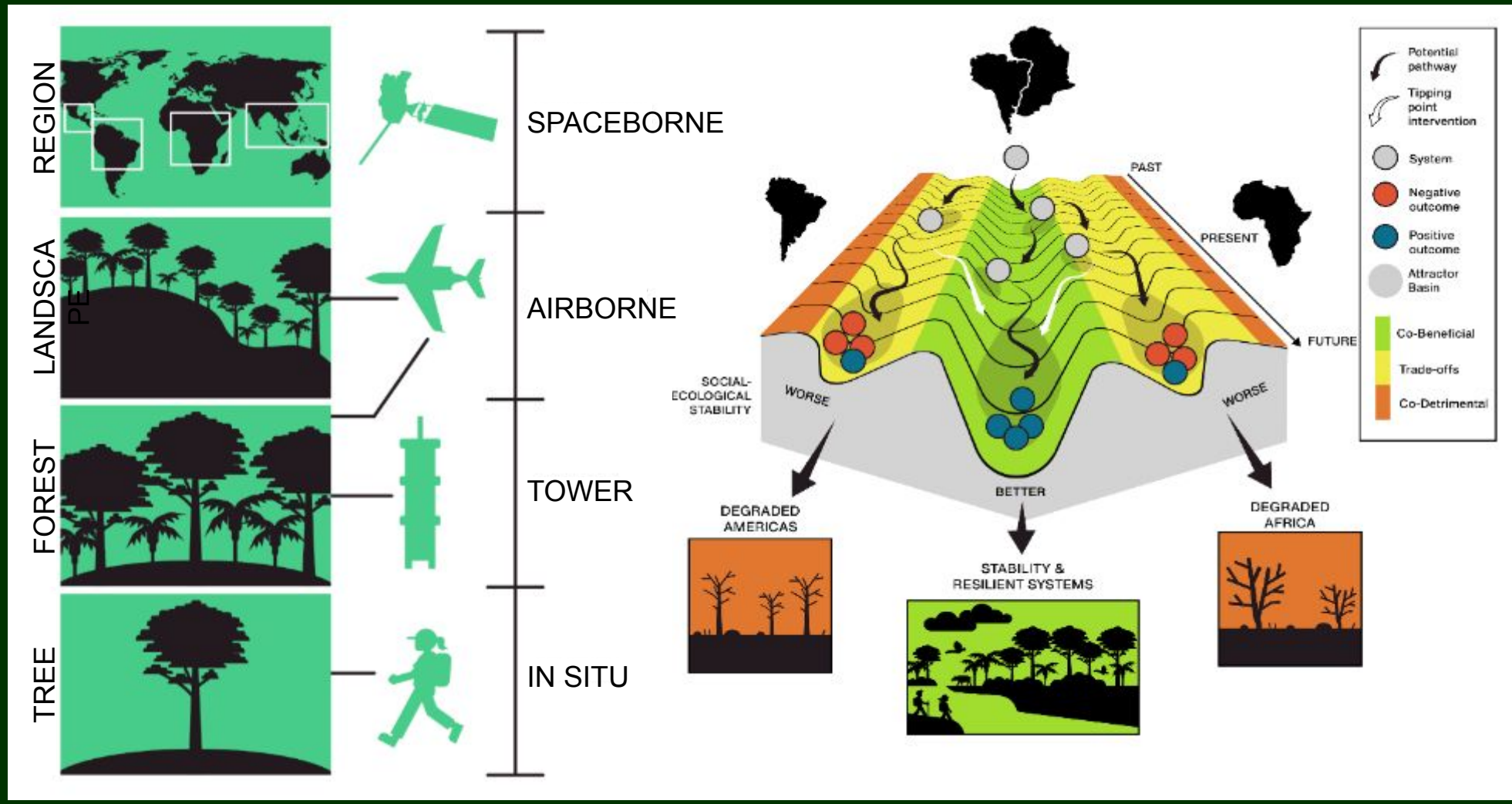
d) Provide valuable opportunities for **training and educating the next generation of scientists**; and

e) Leave a **legacy** data set of great value for future research

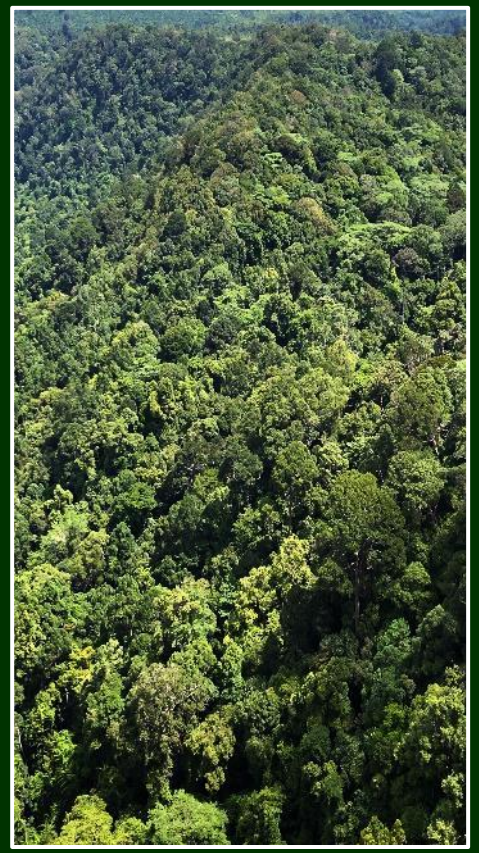
Past NASA TE Field Campaigns

- FIFE: First International Satellite Land Surface Climatology Project (ISLSCP) Field Experiment (1987-1989)
- BOREAS: Boreal Ecosystem-Atmosphere Study (1992-1999)
- LBA: Large-scale Biosphere-Atmosphere Experiment in Amazonia (1998-2011)
- ABoVE: Arctic Boreal Vulnerability Experiment (2015-2024)

What is PANGEA?



Tropical forest regions are **critically important**



Tropical ecosystems:

- Cover 10% ice-free land surface
- Maintain 66-80% of all species
- Are home to over 3 billion people
- Constitute major water and heat pumps, contributing to regional and global climate
- Account for >30% of terrestrial NPP
- Store 25-40% of total terrestrial biomass

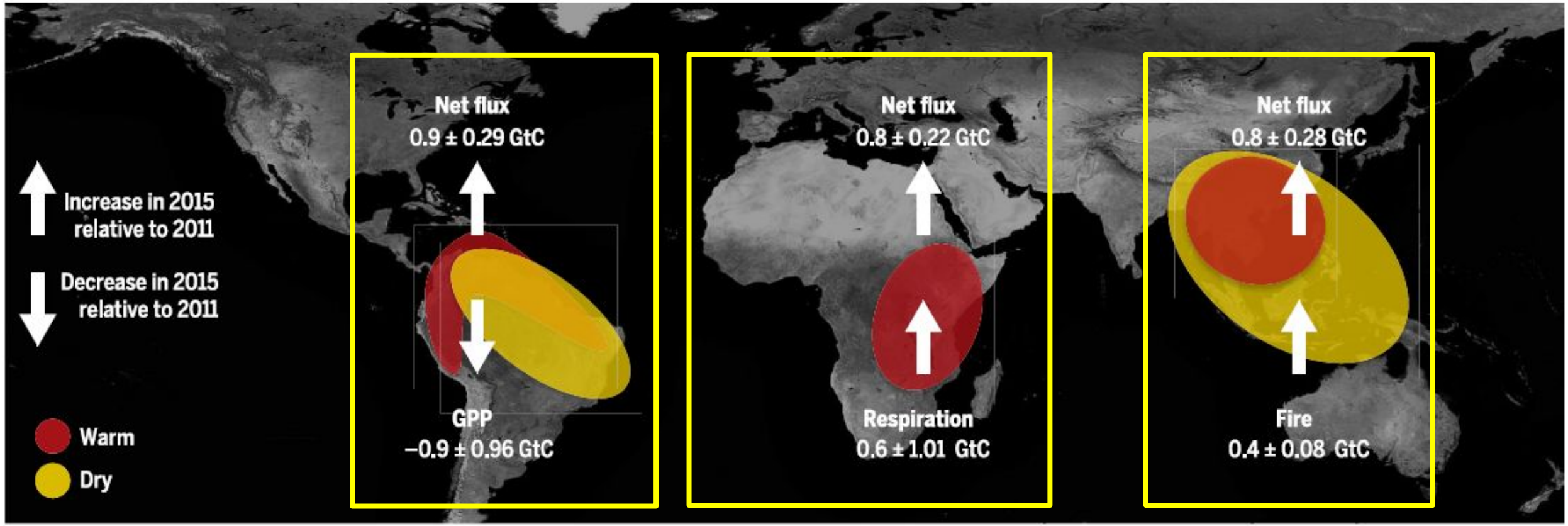
Tropical forest regions are changing rapidly

- Tropical ecosystems are entering a no-analog state – compositionally different than anything found today
- Temperatures will soon be hotter than most tropical ecosystems have experienced in their evolutionary history (range shifts, adaptation, acclimation)
- Cropland and pastureland expansion in the tropics is the single greatest driver of deforestation, causing ~80% of forest conversion globally
- Agricultural production will be directly influenced by changing temperatures and rainfall patterns
- Tropical forest function could be greatly diminished by the end of the century, resulting in critical climate feedbacks
- Even though tropical forests have a huge impact on the entire Earth System, we still lack basic knowledge about them

Improved understanding of heterogeneity across tropical landscapes is critical

Pan-tropical C source following 2015 El Niño

Distinct regional pathways resulted in net C emissions across tropics

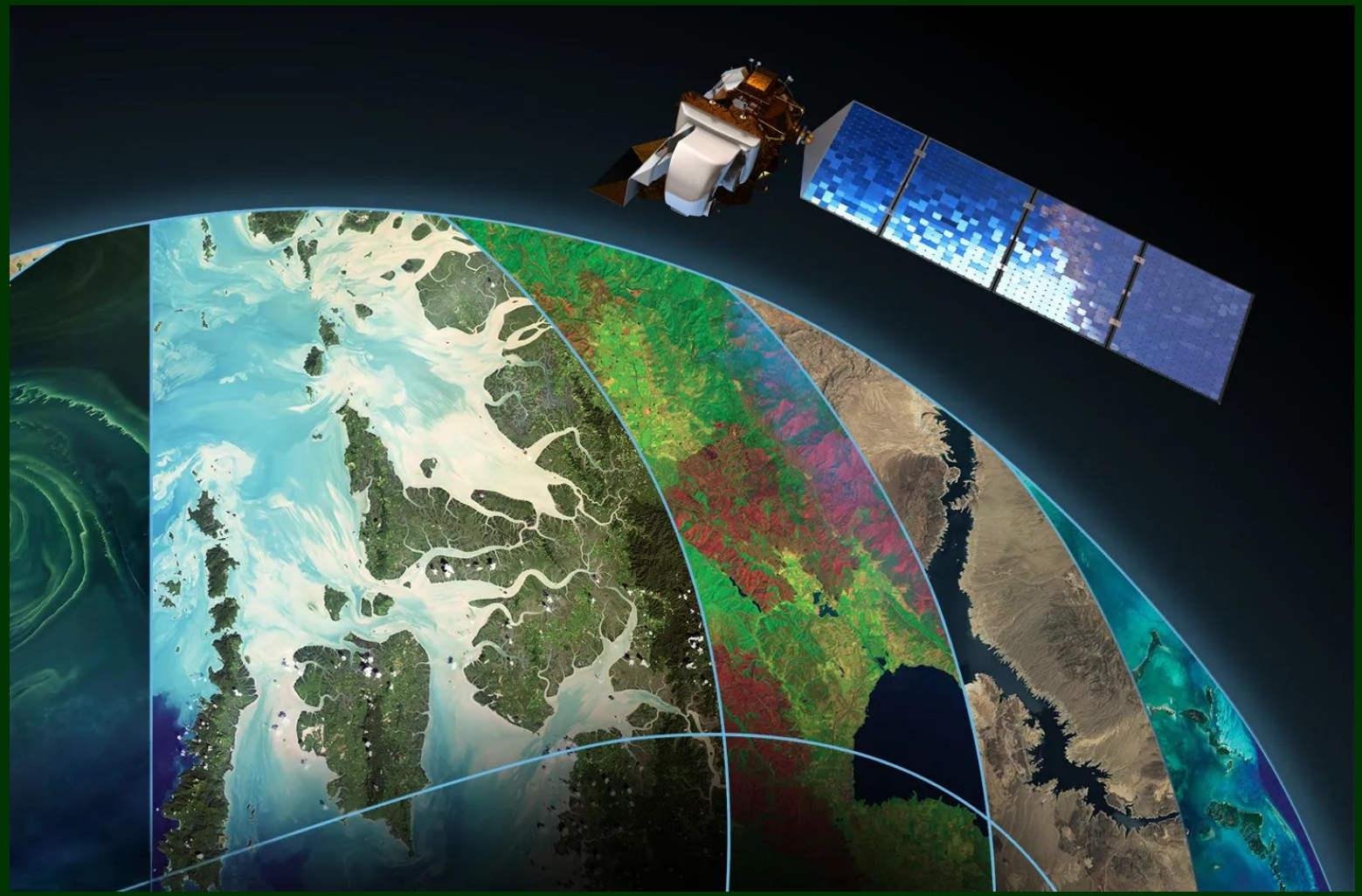


Liu et al. & Eldering et al. 2017 *Science*

- Drier land surface
- Less plant growth
- More CO_2

- Higher temperatures
- Increased respiration
- More CO_2

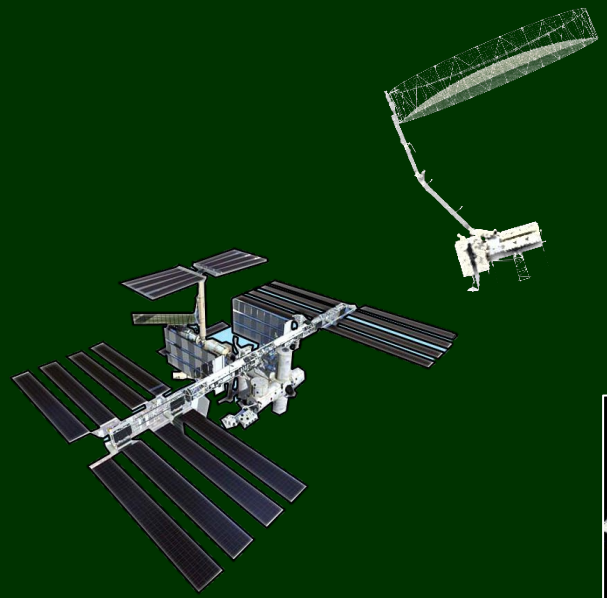
- Hotter and drier
- More fire
- More CO_2



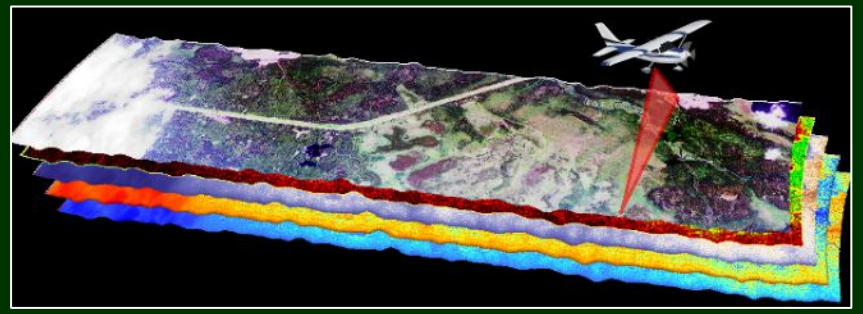
We global remote sensing data with increasing fidelity.

But we do not have collocated, coincident, comparable ground measurements to effectively use these data.

A multi-scalar campaign

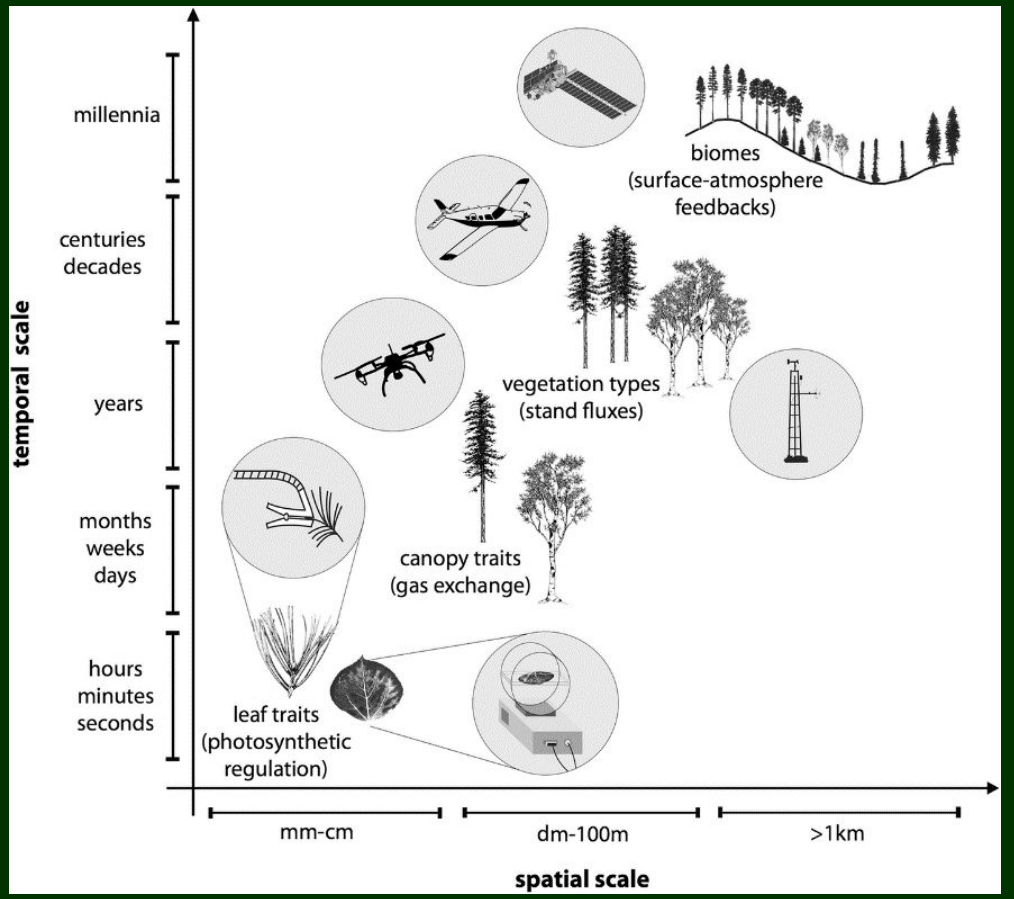


Interdisciplinary: Ecology, Biogeochemistry, Hydrology, Atmospheric Sciences, Socio-Ecological systems, and more



Multi-scalar: Surface, airborne and spaceborne observations

Image credits: CongoFlux, AVIRIS-NG



The scoping process

- A one-year effort to engage with the research community to:
  - Identify scientific research priorities and opportunities
  - Build relationships and define shared goals
  - Evaluate campaign feasibility
  - Determine the geographic scope
- Only 2 scoping proposals funded – PANGEA and ARID
- **Deliver white paper reporting findings by November 2024**
- **If campaign funded, a 6- to 9-year campaign**

Working Groups

Science Themes

- Ecosystem structure, function, & biodiversity
- Biogeochemical cycles & carbon dynamics
- Climate feedbacks & interactions
- Socio-ecological systems

Cross-C utting

- Modeling & data synthesis
- Feasibility
- Community engagement & research applications

PANGEA Working Group Leads

Ane Alencar
Amazon Environmental Research Institute

Adia Bey
NASA Goddard

Dana Chadwick
JPL

Yanlei Feng
MIT

Jose D. Fuentes
University of Pennsylvania

Lydie Stella-Koutika
CRDPI

Marcos Longo
Lawrence Berkeley National Lab

Yue Li
UC Los Angeles

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Helene Muller-Landau
Smithsonian TRI Panama

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University of Ghent

Patrick Namulisa
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Lawrence Berkeley National Lab

Teodyl Nkuintchua
World Resources Institute

Matheus Nunes
University of Maryland

Le Bien Sagang
UCLA

Maria J. Santos
University of Zurich

Hannah Stouter
UCLA

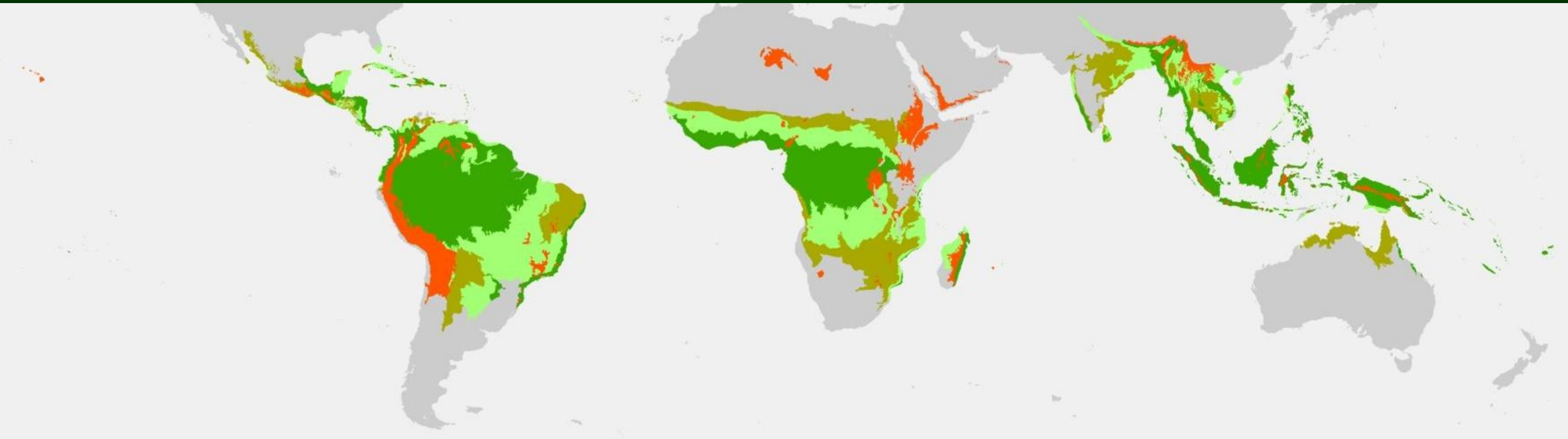
Cesar Terrer
Massachusetts Institute of Technology

Marius von Essen
UCLA

Michelle Wong
Yale University

Sarah Worden
UCLA

Exact PANGEA domain - TBD



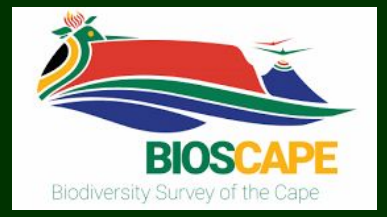
Data source: Olson et al. 2001

PANGEA – Landscape Approach

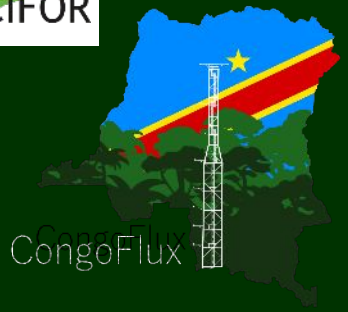
- Identify candidate ‘landscapes’ across the tropics that capture complex mosaics:
  - Intact, logged, degraded, and disturbed forests
  - Wetlands and peatland systems
  - Agriculture
  - Mangroves (in coastal landscapes)
- Coordinated ground, flux tower, drone, and airborne observations

Image credit: Marizilda Cruppe / Rede Amazônia Sustentável

Institutional Partners



Science Panel for the Congo Basin



Congo Basin Science Initiative

Thank You

elsaordway@ucla.edu

Click here to get involved with PANGEA:

Get Involved!

Click here to share your input:

Request for Information

Click here to learn about Working Groups:

Join A Working Group

PANGEA Website

tinyurl.com/tropicalscoping