Earth Observation-based Restoration and Monitoring in coastal and forested protected areas of West Africa

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Objectives

1. Jointly develop an operationalized **monitoring framework** for the inclusion of EO-based data and models into **PA management**.
2. Produce **maps** of **historic and current** forest and coastal wetland **gain, loss and degradation**.
3. Determine **restorable forest, mangrove** and **wetland areas** considering the type of conversion.
4. **Estimate C stocks, C emissions, sequestration** and CO_2 uptake potential from **restoration** and **conservation in PAs**.

End-users

IUCN
AUDA-NEPAD AFRICAN UNION DEVELOPMENT AGENCY
AFRICA NATURE INVESTORS
AGEOS AGENCE GABONAISE D'ÉTUDES ET D'OBSERVATIONS SPATIALES
BLUESEEDS
THE WORLD BANK

Project duration: January 2024 - September 2027

Progress thus far

- **Technical capacity building** for Earth Observation-based monitoring
  - West Africa Workshop, November 2024
  - ARSET Blue Carbon Module, December 2024
- **Earth Observation to support decision-making and land management**
  - Africa Nature Investors - Gashaka Gumti NP, Nigeria
    - Reducing harm to the environment & human health due to illegal artisanal mining
    - Improving fire management
  - BlueSeeds - Cacheu NP, Guinea Bissau
    - Optimizing mangrove restoration efforts using land cover & canopy height-based mangrove stratification
    - Leveraging EO data to increase access to financing
- **Key knowledge products**
  - Land use & land cover change over 25 years across coastal West and Central Africa
  - Geospatial analysis of mangrove restoration potential across West and Central Africa for publication
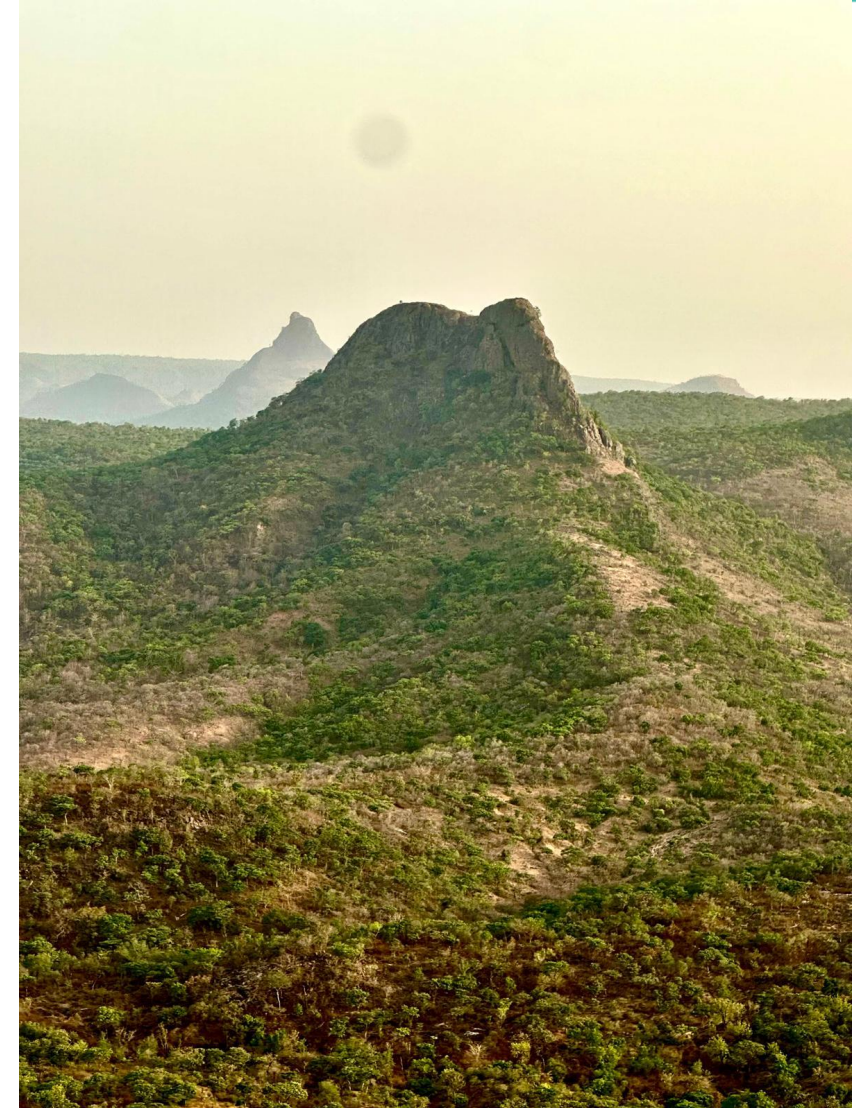

Gashaka Gumti National Park, Nigeria

Technical Capacity Building: West Africa Workshop on Earth Observation for Protected Areas

- Objectives:
  - **Learn more** about the monitoring priorities of the partner and collaborating organizations
  - **Share relevant** global, regional and local EO **data products and analytical techniques**
  - **Jointly develop a plan** to improve, customize and deploy EO applications to achieve monitoring goals

- Dakar, Senegal, November 11th – 15th 2024

- **29 Participants** from **16 countries**

- 95.5% of participants learned more about Earth Observation for monitoring protected areas
(1 participant helped support for learners)

  - **100% of participants benefited from new ideas to achieve mapping and monitoring objectives**

95.5%

100%
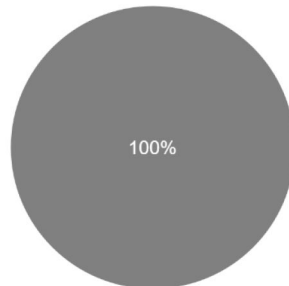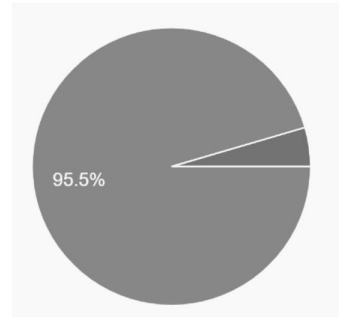
Technical capacity building: ARSET Blue Carbon Module

- Guest Instructors Lola Fatoyinbo, Adia Bey + project collaborators from Conservation International, María Claudia Díazgranados Cadelo and Siti Maryam Yaakub help participants…
  - Understand blue carbon ecosystem characteristics
  - **Map the extent of mangrove ecosystems using satellite observations**
  - **Calculate the carbon stock** of mapped mangrove ecosystems
  - Start monitoring mangroves with prepared Google Earth Engine scripts
- Over **550 Participants** from **89 countries** between December 3-5, 2024
- Over **1,000 views** on YouTube in 5 months
- ARSET's 1st module offered in French & English

Monitoring and Conservation of Protected Areas in Nigeria

- Strengthening biodiversity conservation through better monitoring and management of anthropogenic disturbance (incl. mining) within the protected areas

- Improving fire management with MODIS, VIIRS, FIRMS & Sentinel 2 data

- Carbon accounting with West Africa Specific GEDI products
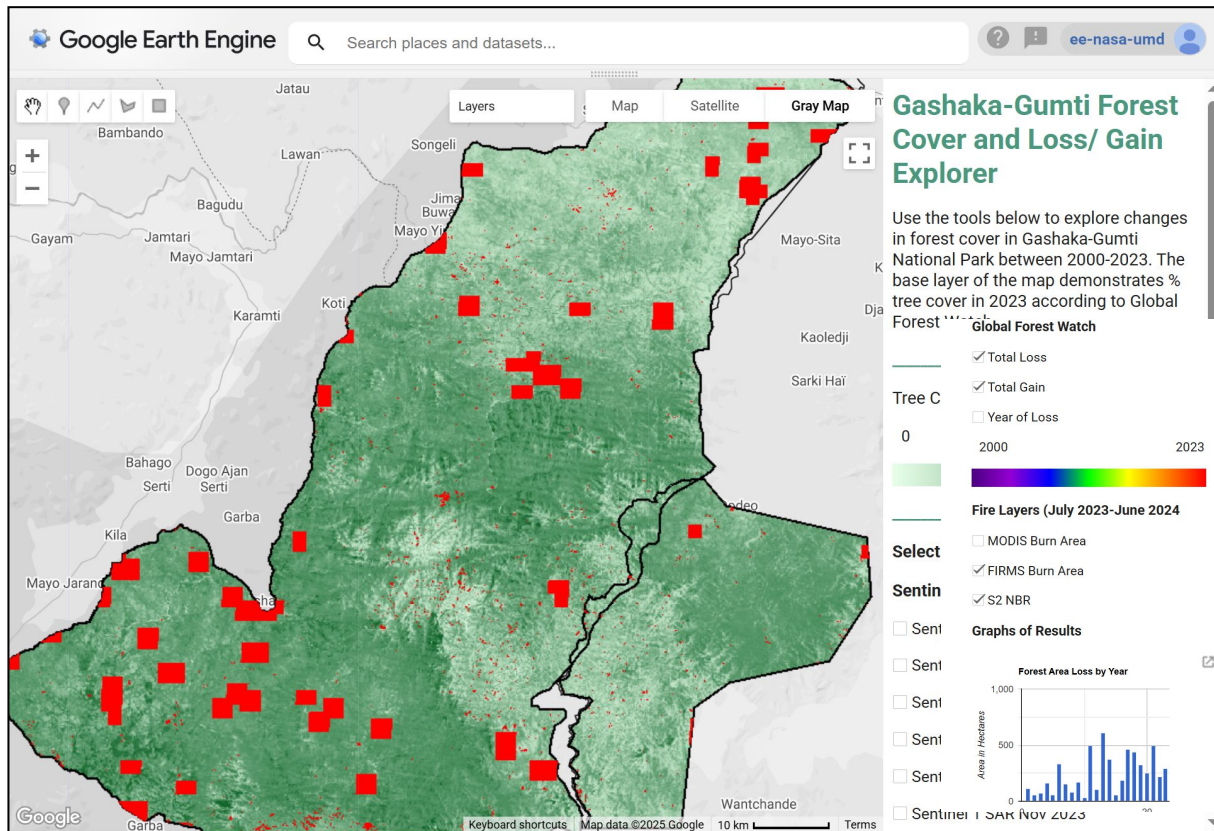
Mangrove Monitoring and Restoration of Protected Areas in Guinea-Bissau

- Facilitating field research for blue carbon accounting with canopy height-based mangrove stratification

- Promoting transparency in the blue carbon accounting

- Leveraging EO data to increase access to blue carbon finance

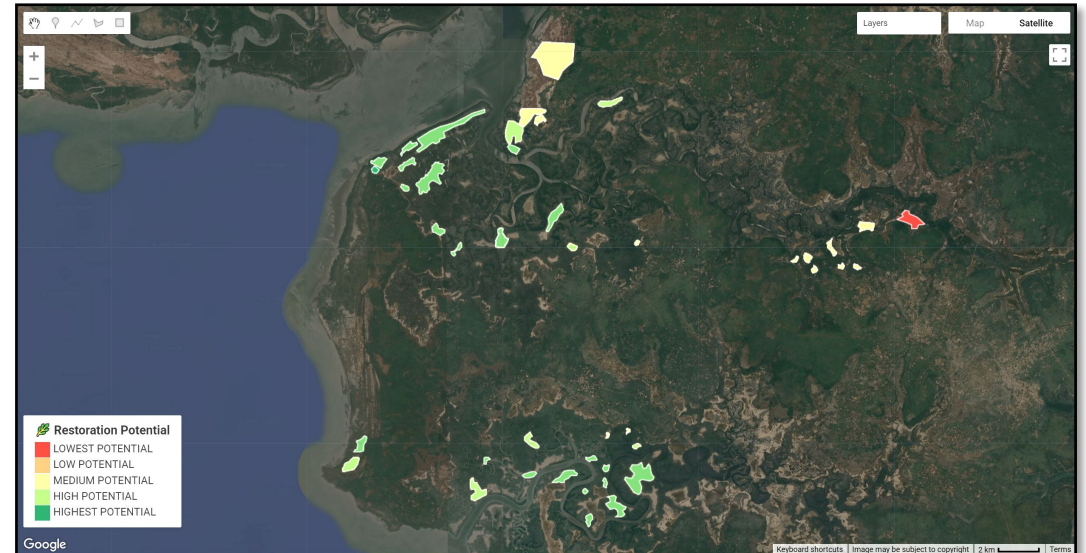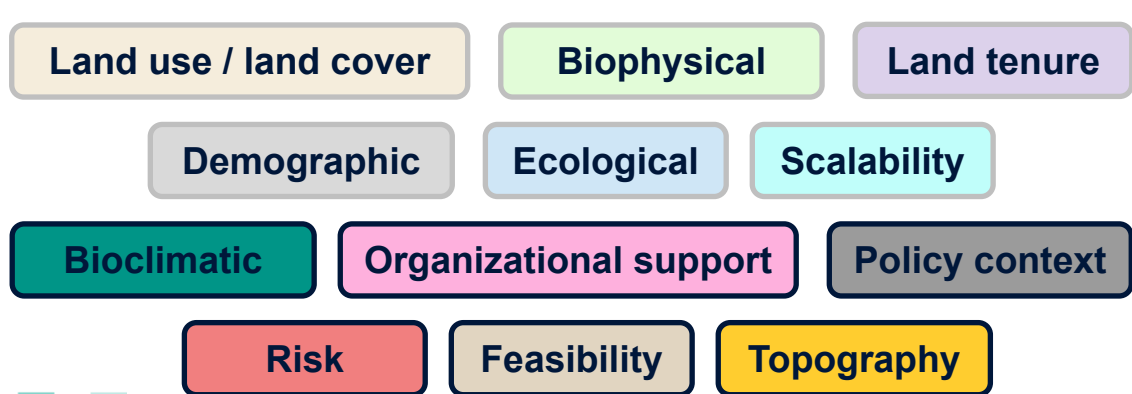- Optimizing mangrove restoration efforts
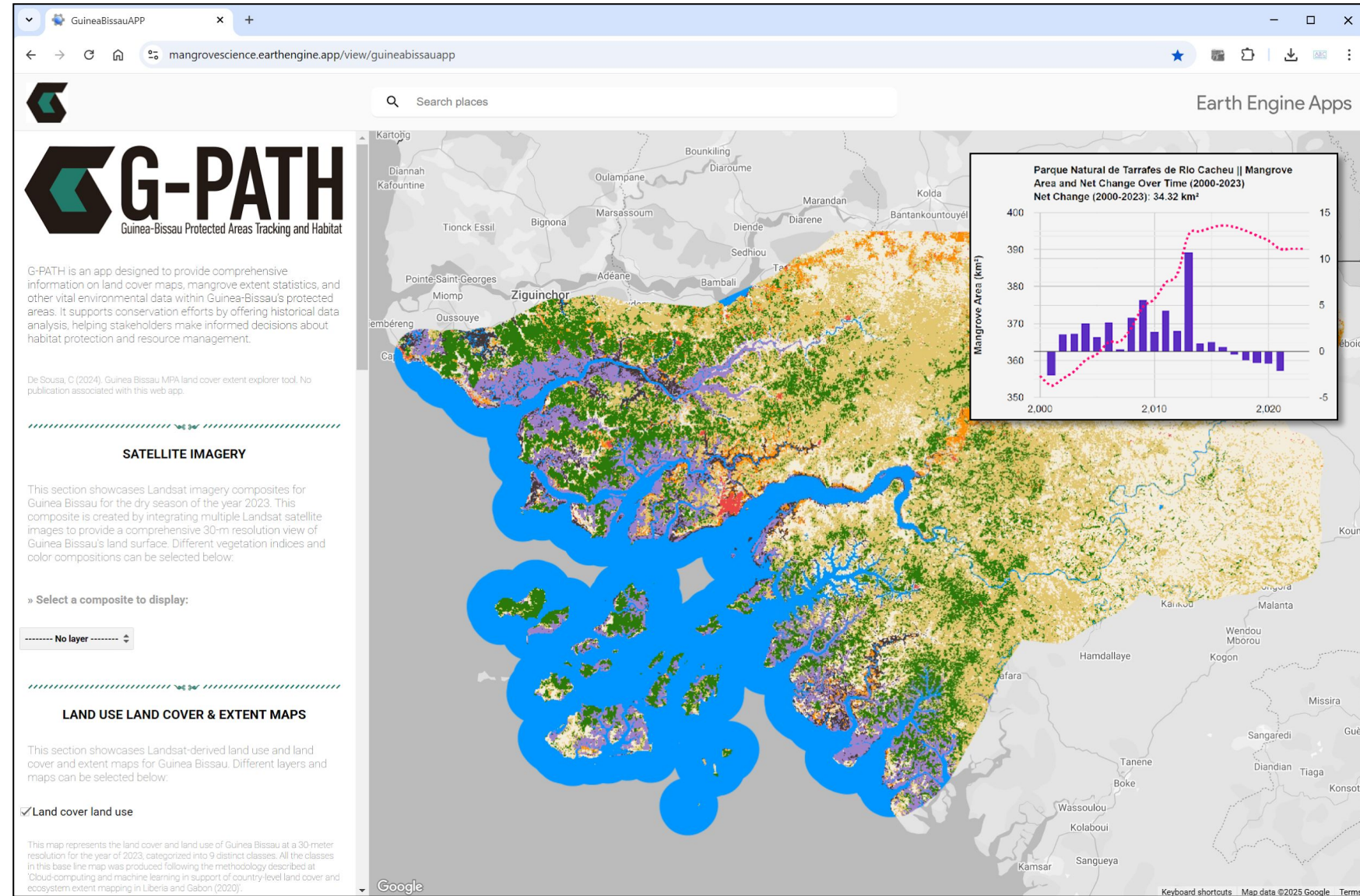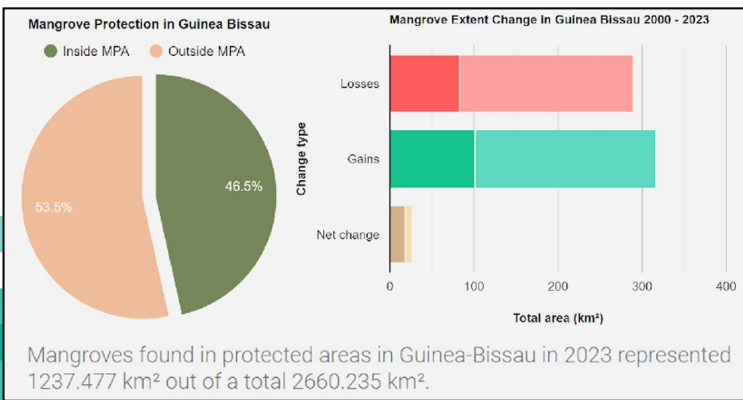
Key knowledge product: Land use & land cover change over 25 years across coastal West and Central Africa

- Produced with Landsat & Sentinel 2

- Will be validated by local, national and regional project partners and collaborators

- Goal:
  - More accurate and precise data for West and Central Africa than available global products
  - Actionable data to inform mangrove and protected area conservation & restoration
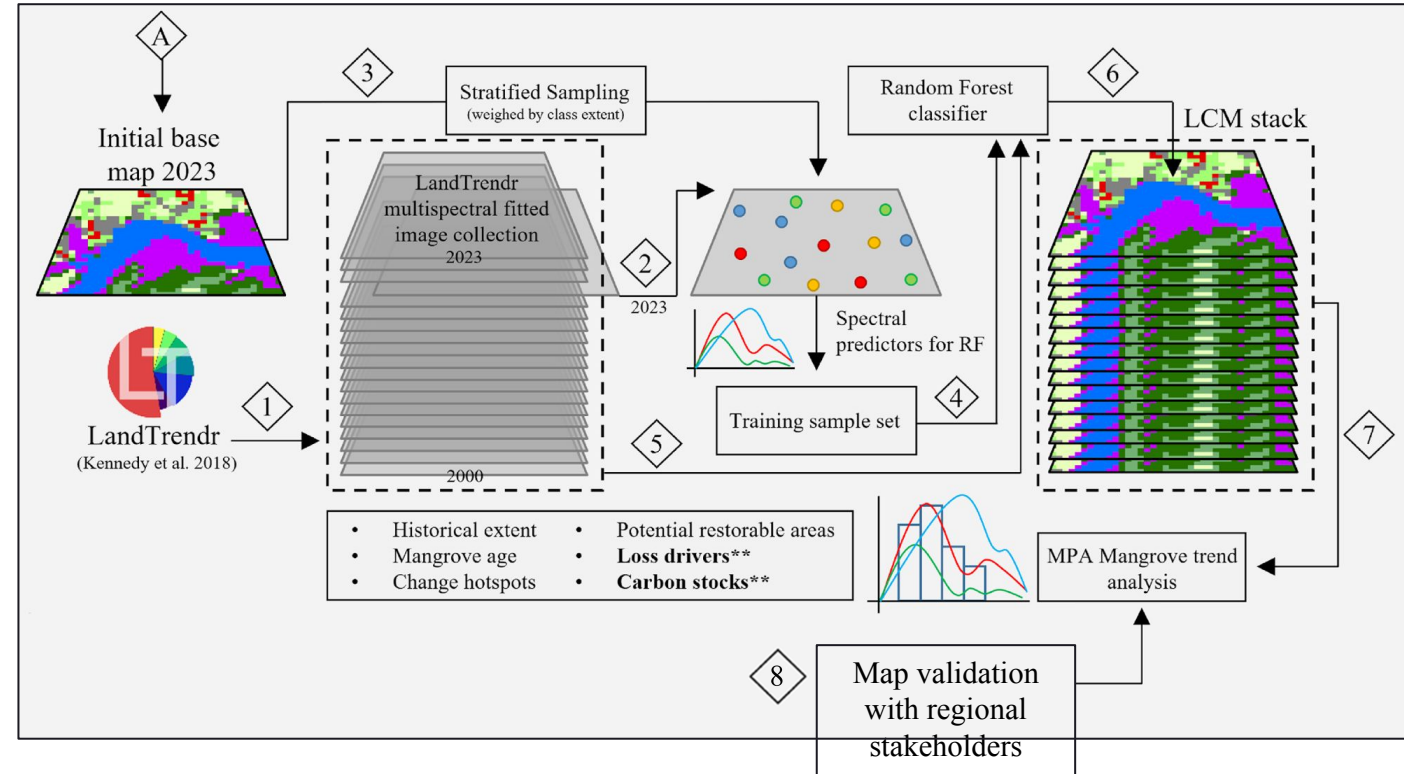
Key knowledge product: Mangrove Restoration Potential across West and Central Africa

- Leverage the latest EO-based products, including our own regional land use / land cover data product

- Draw upon multidisciplinary GIS datasets

- Bridge the gap between best practices for mangrove restoration & actionable, restoration-ready mapping products

- Engage with local, national and regional stakeholders to adapt and validate the methodology

- Assess mangrove restoration potential in conjunction with mangrove loss

Land use / land cover **Biophysical** **Land tenure**

Demographic **Ecological** **Scalability**

Bioclimatic **Organizational support** **Policy context**

Risk **Feasibility** **Topography**

Thank You!