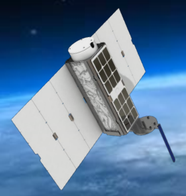
Project Centinela

Digital Public Good for Vulnerable Biodiversity Hotspots

October 1, 2024

CENTINELA RANGE, ECUADOR

You can’t fix what you can’t see.



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PLANET'S MISSION

To image the whole world every day and make global change **visible**, **accessible**, and **actionable**.

Our Public Benefit Corporation (PBC) Purpose:

To accelerate humanity toward a more sustainable, secure, and prosperous world by illuminating environmental and social change.

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Planet Dove Satellite

- Always-on, broad-area monitoring
- 3 meter resolution
- 8 spectral bands

Planet Dove Constellation

~98° Sun-Synchronous Orbit

Planet SkySat Satellite

- Custom, targeted monitoring
- 50 centimeter resolution
- RGB, NIR, and Pan bands

Planet SkySat Constellation

SkySats 1-15

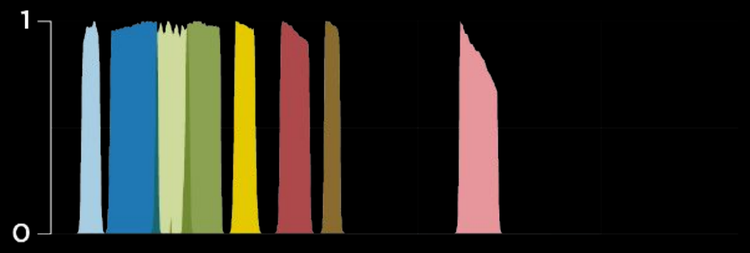
~98° Sun-Synchronous Orbit

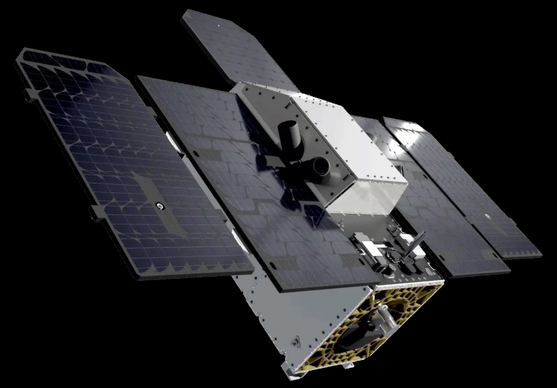
SkySats 16-21

~53° Inclined Orbit

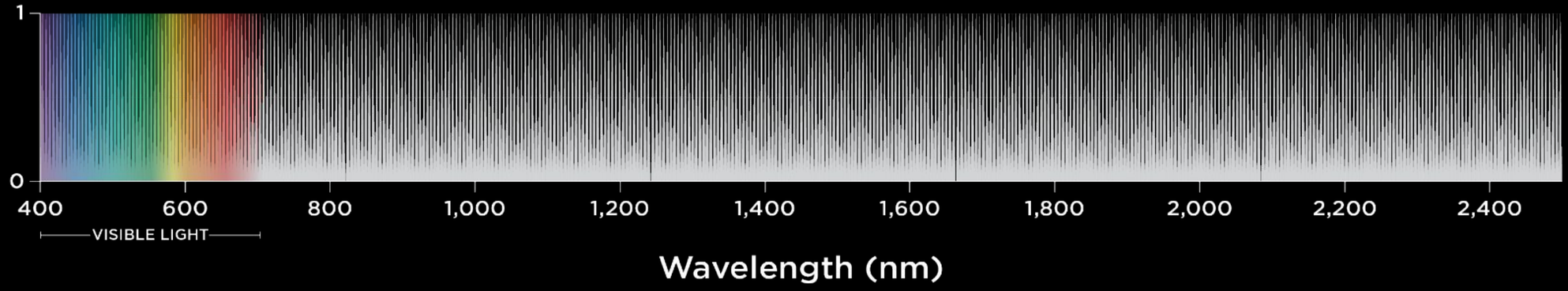
Tanager: high-fidelity hyperspectral for biodiversity

SuperDove: 8 Spectral Bands (near-daily scan)





Tanager: 420+ Spectral Bands (tasked monitoring)



For spectral range comparison purposes only – sensor does not provide uniform response across spectrum.

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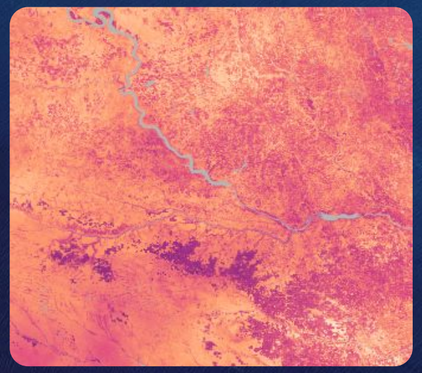
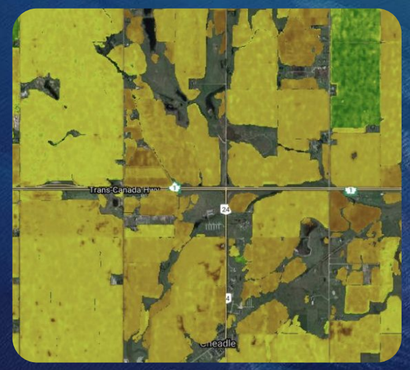
+ Planetary Variables

AI-powered, validated models of Earth's changing surface

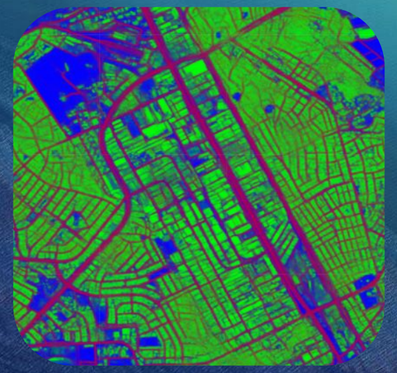
SOIL WATER CONTENT



LAND SURFACE TEMP

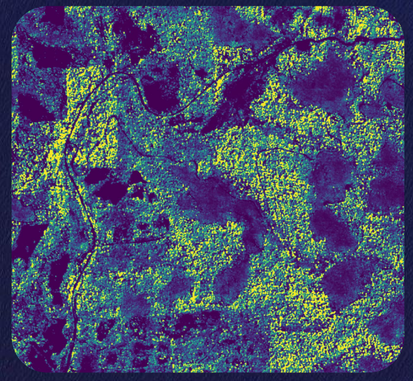


CROP BIOMASS



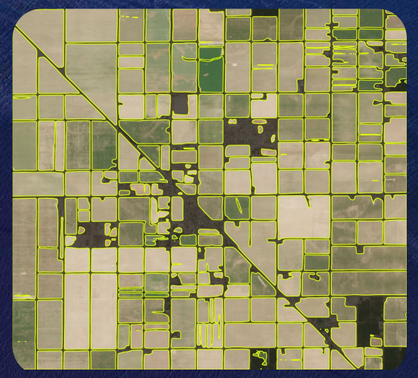
ROADS & BUILDINGS

FOREST STRUCTURE



FOREST CARBON

VEGETATION ENCROACHMENT



FIELD BOUNDARIES

GULF OF OMAN · Iran · June 3, 2021

Planet Solutions

Monitoring

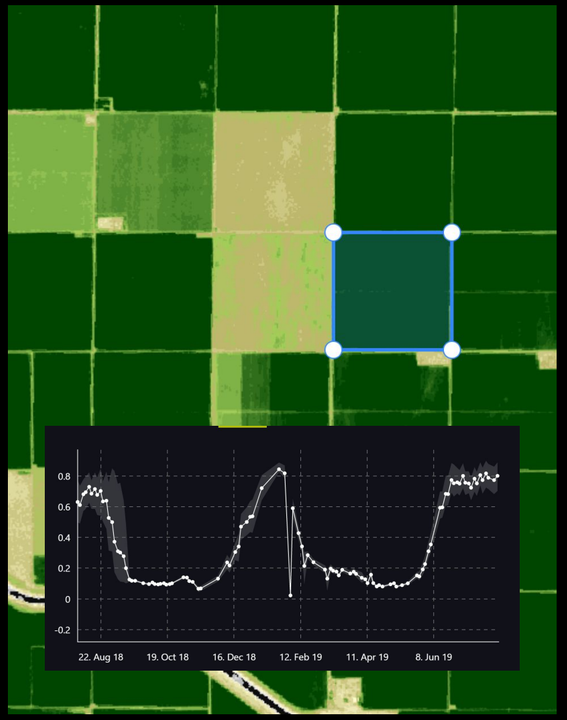
Planetscope 3.7m imagery
Updated on a near-daily basis

Tasking

SkySat imagery tasking with
rapid intraday revisit capability

Planetary Variables

Measurements of phenomena
on the Earth’s surface



Platform

API-first cloud platform to extract
insights from imagery at scale

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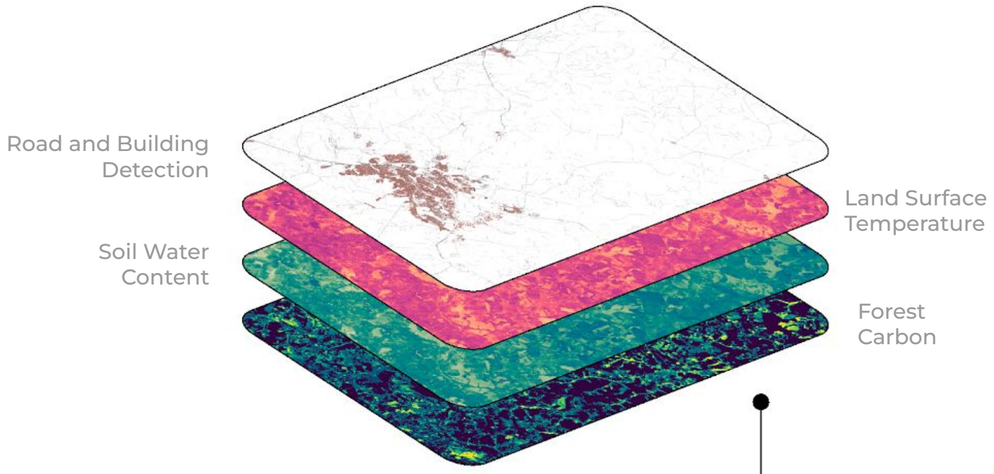
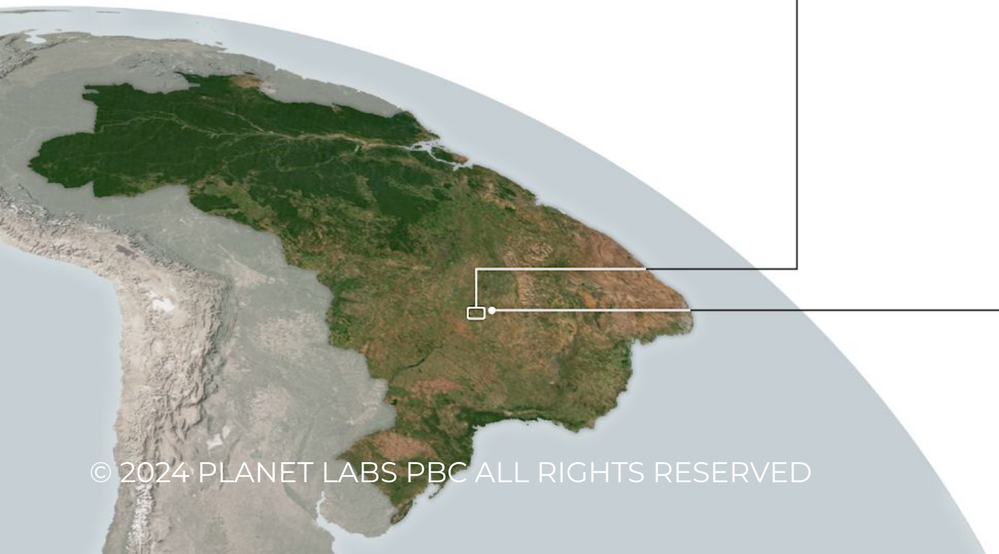
Looking Deeper

Planetary Variables and Analytics measure phenomenon and classify objects



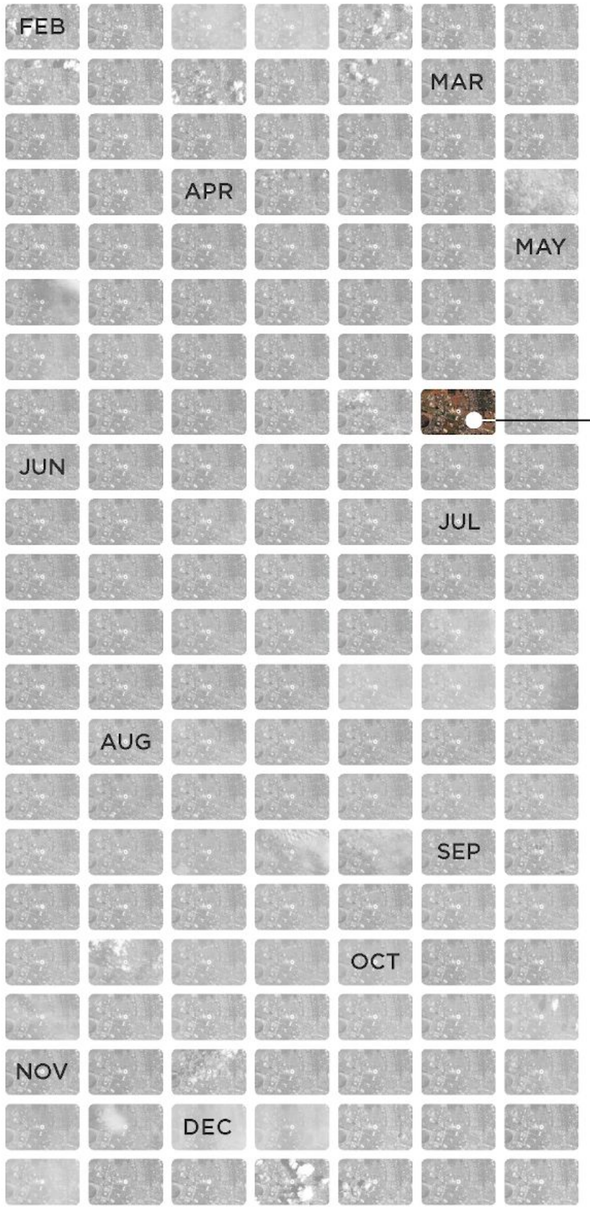
Looking Broader

A daily scan of Earth's landmass and Strategic waterways



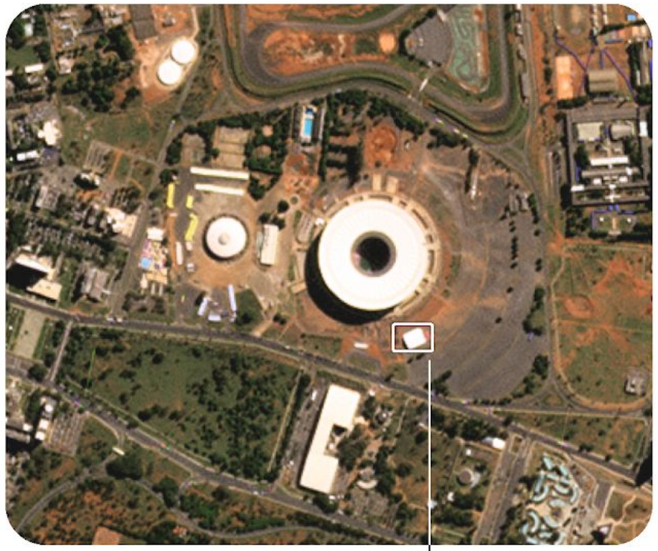
Looking Back

An extensive archive provides a view backwards in time



Looking Closer

Automated Change Detection identifies relevant, timely change across broad areas



Nuanced decision-making with high-resolution imagery

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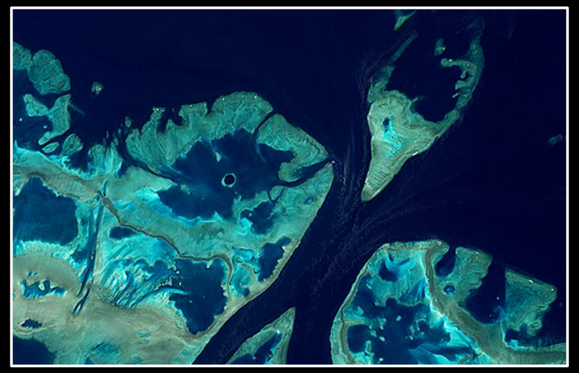
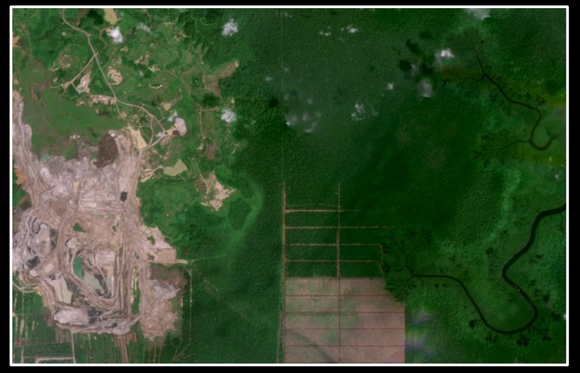
Planet Purpose Programs

Focal areas

BIODIVERSITY



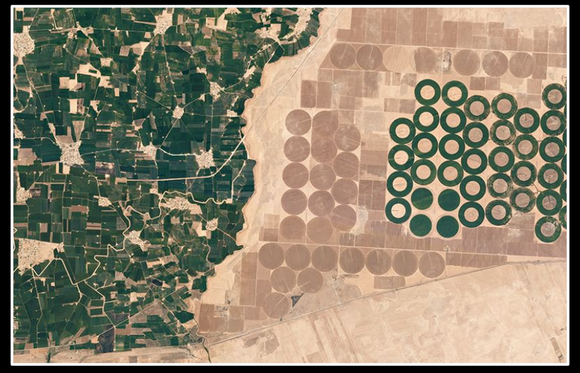
FORESTS



SCIENCE

CLIMATE

CRISIS RESPONSE



FOOD SECURITY

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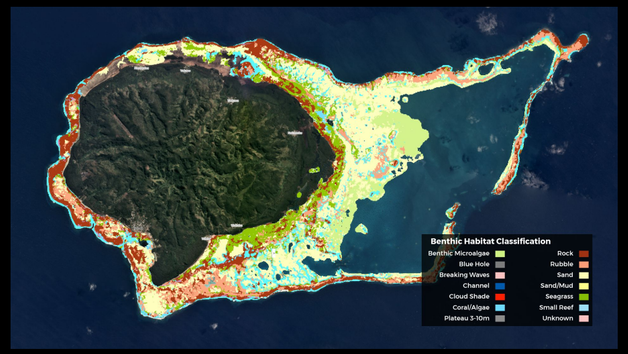
Planet Purpose Programs

Digital Public Goods

OCEAN CONSERVATION



VULCAN

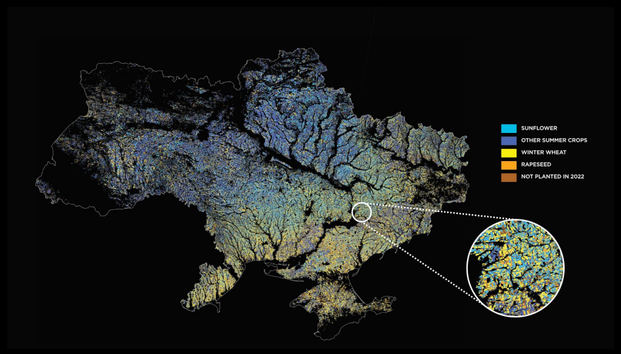
ASU Arizona State University

NATIONAL GEOGRAPHIC

The University Of Queensland AUSTRALIA

ALLEN CORAL ATLAS

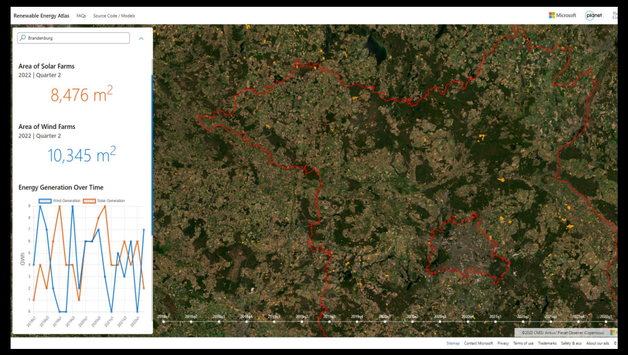
FOOD SECURITY



HARVEST

FOOD SECURITY & AGRICULTURAL MONITORING SOLUTION

RENEWABLE ENERGY

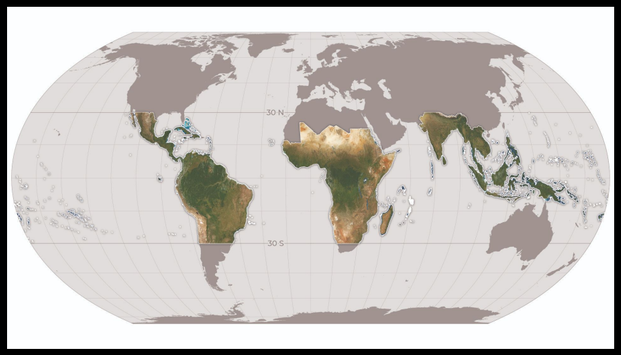


The Nature Conservancy

Microsoft

GLOBAL RENEWABLES WATCH

FOREST & LAND USE



NICFI
Norway's International Climate and Forest Initiative

KSAT KONGSBERG SATELLITE SERVICES

AIRBUS

NICFI SATELLITE DATA PROGRAM

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Introducing our newest
Digital Public Good

PROJECT CENTINELA

Southern Centinela Range · Ecuador · April 29, 2023

Gasteranthus *extinctus*

The world's Centinela moment

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Conservation Imperatives

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Why Project Centinela?

1. Help achieve Kunming-Montreal Global Biodiversity Framework 2030 Targets
2. Fast-track knowledge about ecosystems and biodiversity to forestall the most likely extinctions and extirpations
3. Put high-tech data and insights into the hands of those on the frontlines of conservation
4. Engage a community of biodiversity-focused Planet users
5. Help make conservation actions faster, smarter, and more sustainable

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Project Centinela

Open applications for the places that need it most

For up to 50 vulnerable biodiversity hotspots

Evaluation criteria for sites with richness, rarity and risk:

- High conservation value
  - using a recognized approach like KBA, World Heritage Site
- Risk to biodiversity
  - e.g. habitat destruction, overexploitation
- Landscape scale <15,000 sq km
  - e.g. national park, community reserve; not nation or biome
- Priority for underinvested ecosystems
  - e.g. aquatic ecosystems, grasslands and savannas, coastal

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Project Centinela

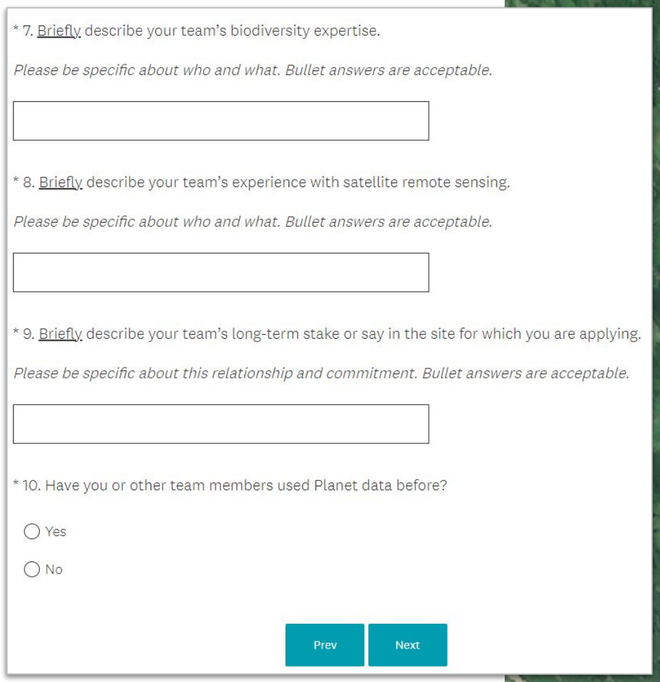
For those who are ready to hit the ground running and stay committed over the long term

For up to 50 committed teams as end-users

Evaluation criteria for project team:

- Biodiversity expertise
- Experience with remote sensing
- Long-term stake in the place identified

www.surveymonkey.com/r/projectcentinela



Centinela Range, Ecuador

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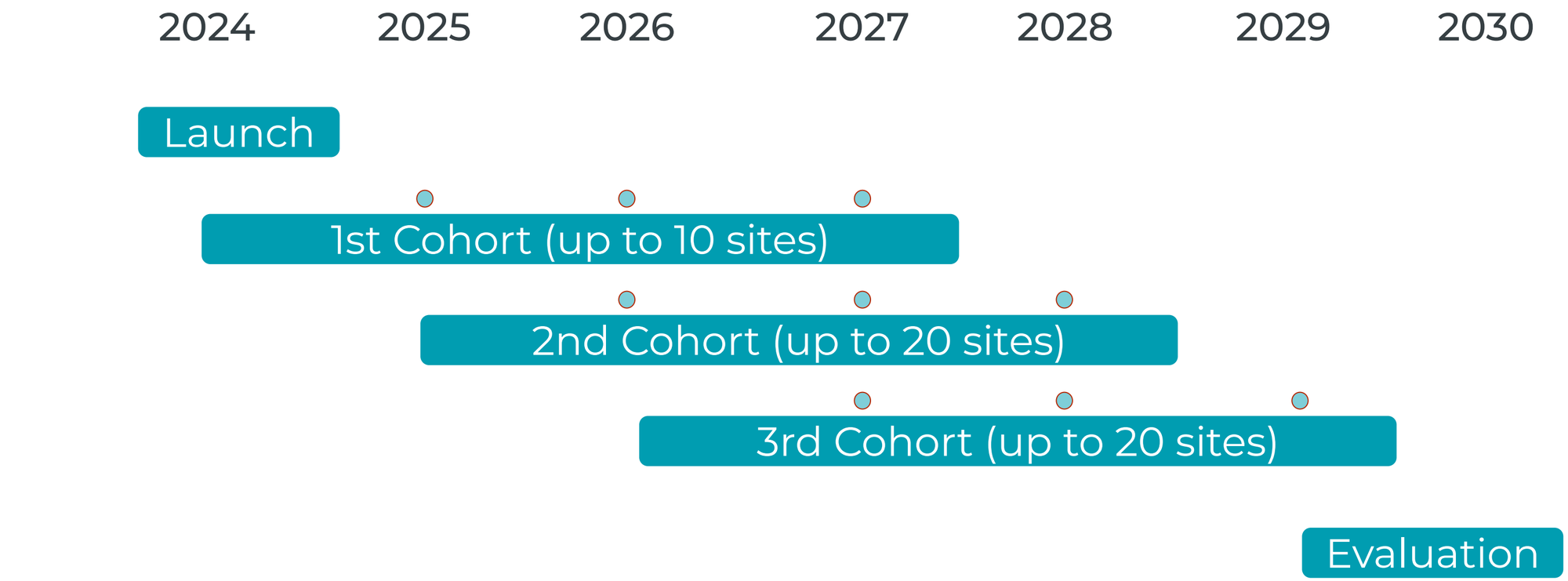
Project Centinela

3 cohorts over 5 years



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“Biodiversity Subscription” for Centinela sites

Applicants have the opportunity to express interest in:

- **Basemaps**
  - Monthly basemaps (streaming & download)
  - Archive (2020 - present)
- **PlanetScope**
  - Monitoring
  - Archive (2020 - present)
- **SkySat**
  - Limited Flexible Tasking
  - Archive (2020 - present)
- **Planetary Variables**
  - Forest Carbon Diligence & Monitoring (30m, 3m)
  - Land Surface Temperature (1km or 100m)
  - Soil Water Content (1km or 100m)
  - Crop Biomass (10m)
- **Analytic Feeds**
  - Road Detection & Change Detection
- **Insights**
  - Platform access + “Basic” Sentinel Hub license (70,000 processing units / month)
  - Technical Quickstart training

Not all data types will be feasible or needed for every hotspot

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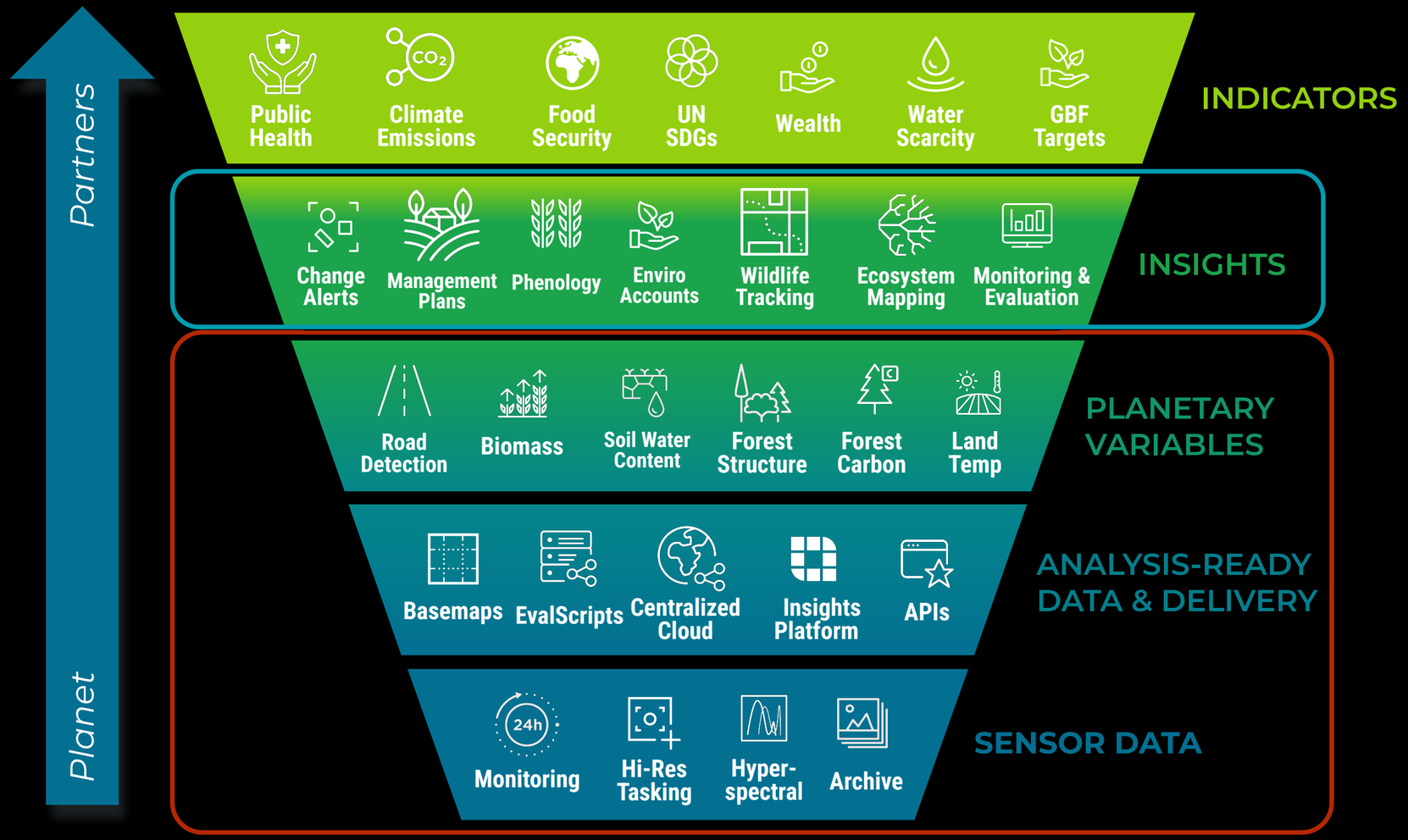
Data Delivery for Biodiversity Insights



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The Power of the Biodiversity Subscription

An example use for combating desertification and advancing restoration

JUSTDIGGIT

CHALLENGE

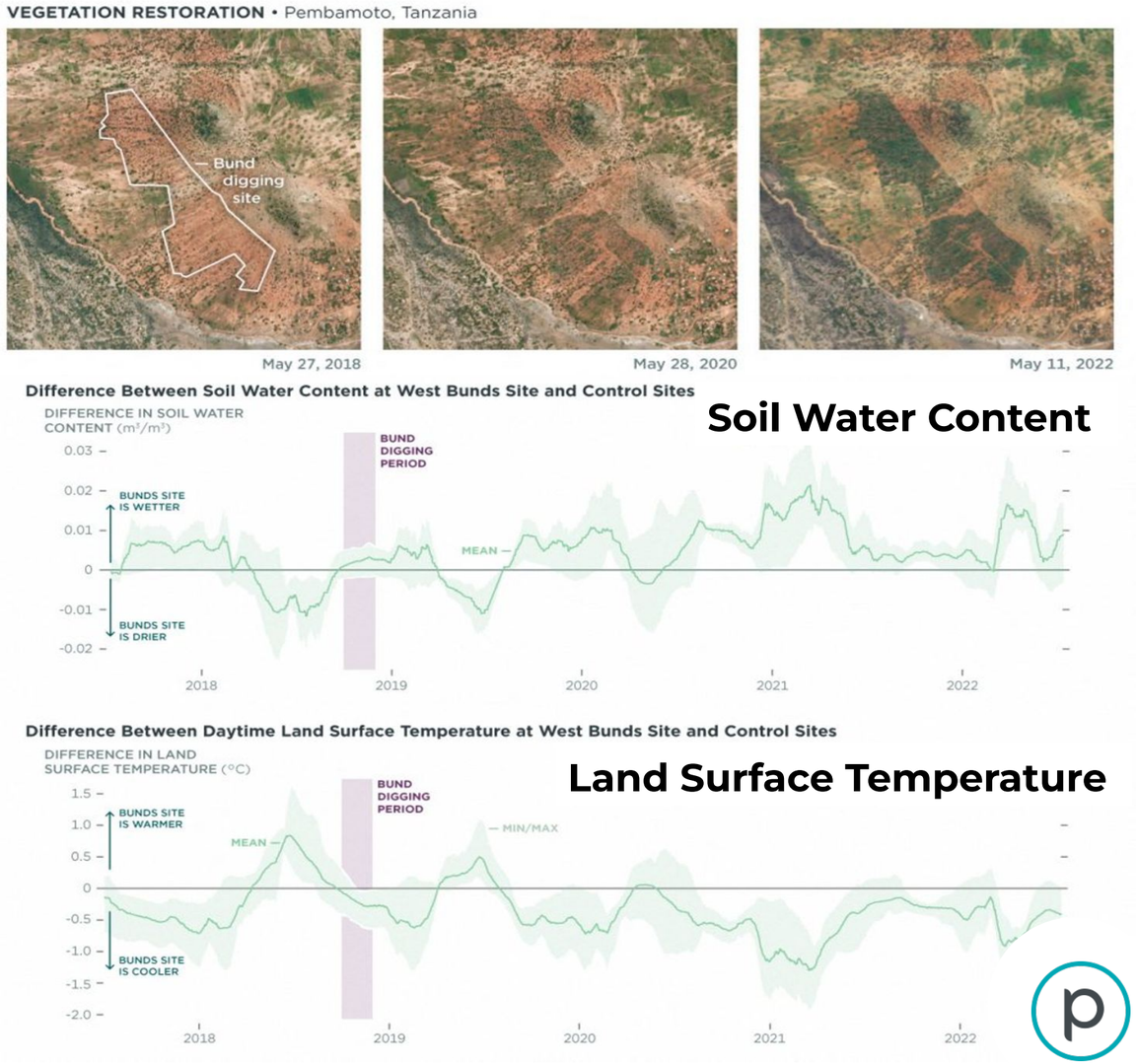
- Fertile areas in East Africa are being degraded into drought-laden deserts due to loss of native vegetation

ACTION

- Justdiggit used **Planet data to evaluate success of regreening over time from locally dug bunds**
- Planetary Variables quantified the liters of water retained by the soil, degrees of surface cooling, and vegetation increase.

RESULTS

- **Bunds increased soil moisture, lowered temperatures, and increased vegetation.**
- JustDiggit has restored 300,000 hectares and more than 10 million trees in sub-Saharan Africa.



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Introducing our first cohort of sites

PROJECT CENTINELA

Southern Centinela Range · Ecuador · April 29, 2023

First Year

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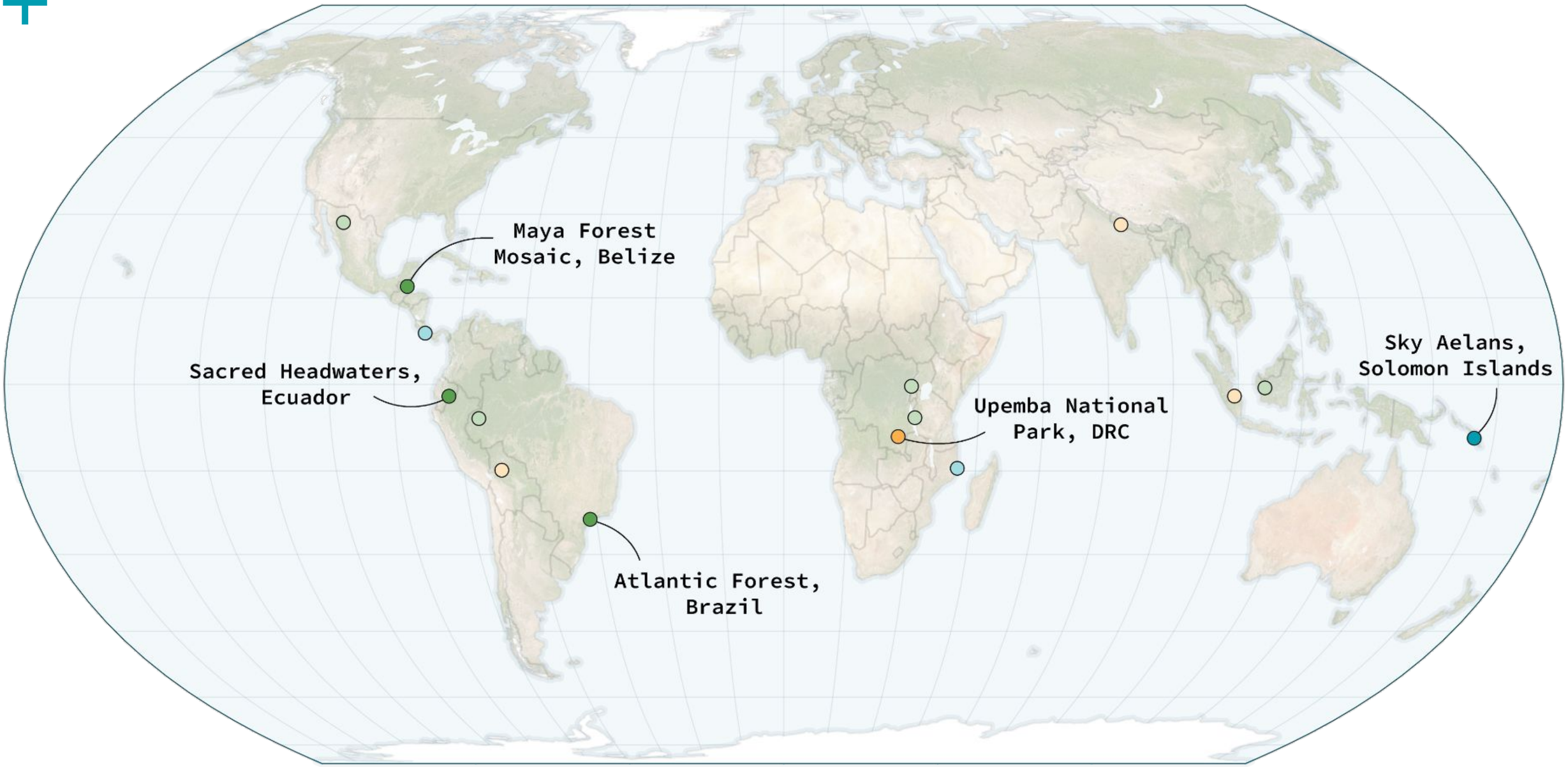
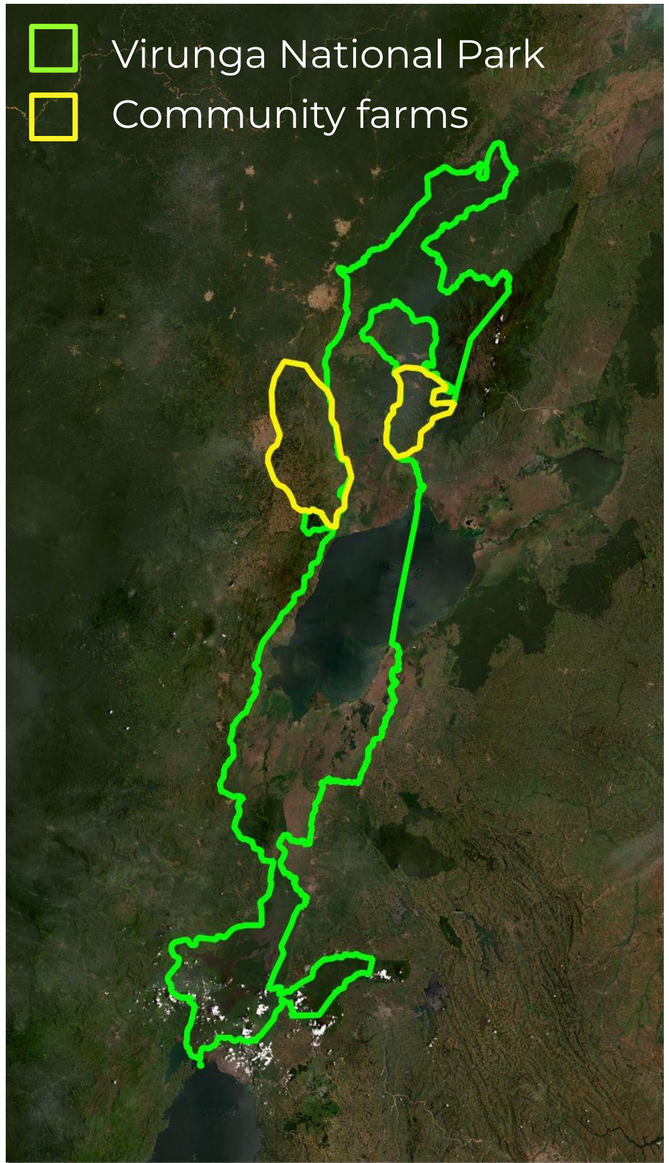
Second Year


Maya Forest Mosaic, Belize
Sacred Headwaters, Ecuador
Atlantic Forest, Brazil
Upemba National Park, DRC
Sky Aelans, Solomon Islands
Forest
New
Existing
Coastal
New
Existing
Grassland/Wetland
New
Existing

Virunga National Park, DRC

War-battered park protecting endangered mountain gorillas

- Monitoring park boundaries for deforestation and effective management
- Analyzing smallholder farms to help local communities access deforestation-free, non-conflict markets
- High-res tasking of Mikeno sector where endangered gorillas live, which is hard to reach in times of conflict



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Osa Peninsula, Costa Rica

Crucial ridge to reef corridor, offering a refuge to wildlife under climate change

- Restoring mangroves, establishing wildlife corridors, and monitoring habitat restoration
- Integrates Planet data with gridded camera traps and GPS tags for wildlife connectivity metrics

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Vale do Javari, Brazilian Amazon

Remote, unexplored wilderness; homeland to Indigenous peoples in various stages of contact

- Helping Indigenous stewards monitor areas at risk of invasion, report environmental crimes, and plan field expeditions in the second largest Indigenous territory in the Brazilian Amazon

- Planet data monitor borders and rivers for illegal incursions, protecting Indigenous health and the lives of surveillance team

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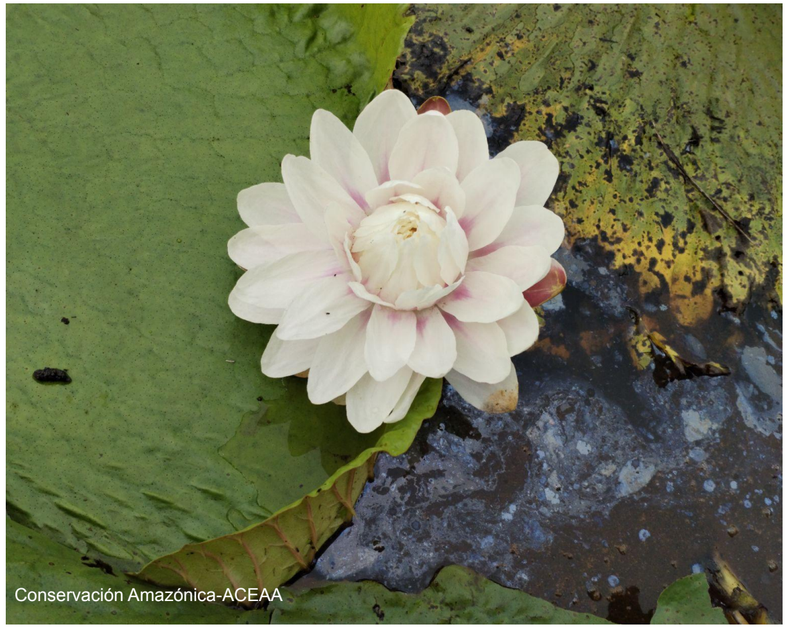
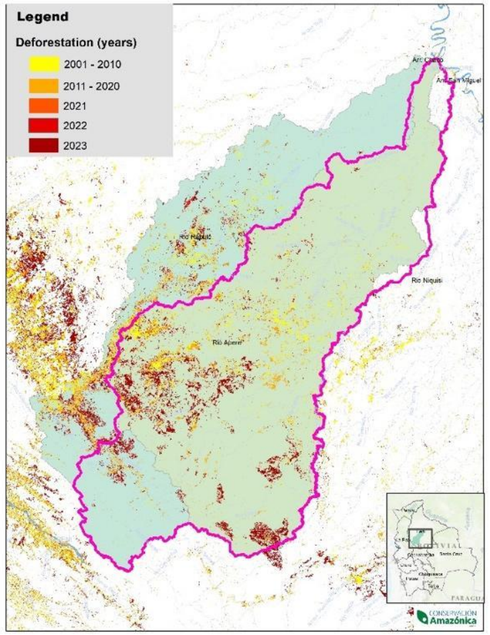
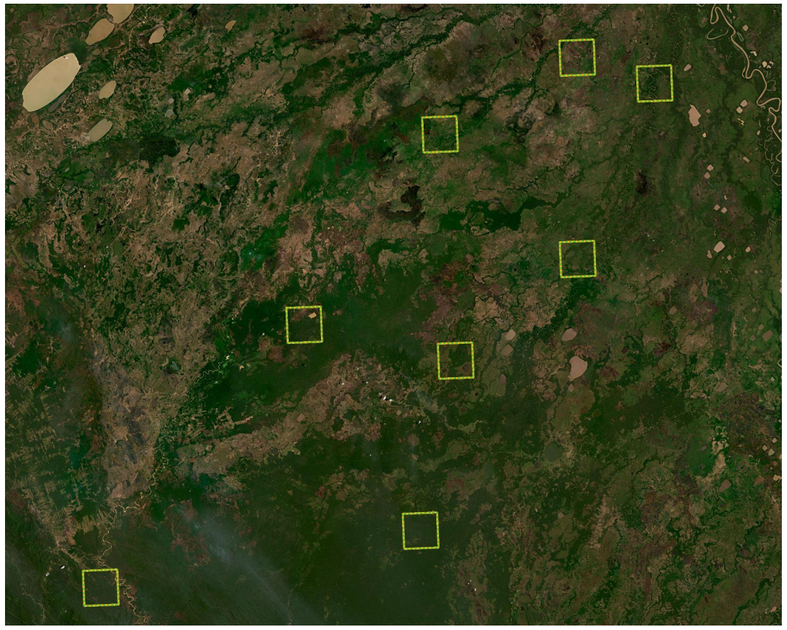
Rio Matos Ramsar Site, Bolivia

Wetland of International Importance with endemic giant water lilies, black spider monkeys

- Supporting the creation of new conservation and protected areas
- Monitoring sustainable cattle grazing and producing alerts for agriculture-driven invasion and degradation
- New application of Planet data to characterize wetland health







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Sumatra Merang Peat Dome, Indonesia

Combating climate change by restoring habitat for the Sumatran tiger and other key species

- Delivering community benefits through certified reforestation projects that rewet and seed peatlands and halt fires in their tracks
- Boosting connectivity by restoring a wildlife corridor between key national parks
- Leverage Planet data for accurate forest carbon accounting, threat detection, and habitat quality assessment

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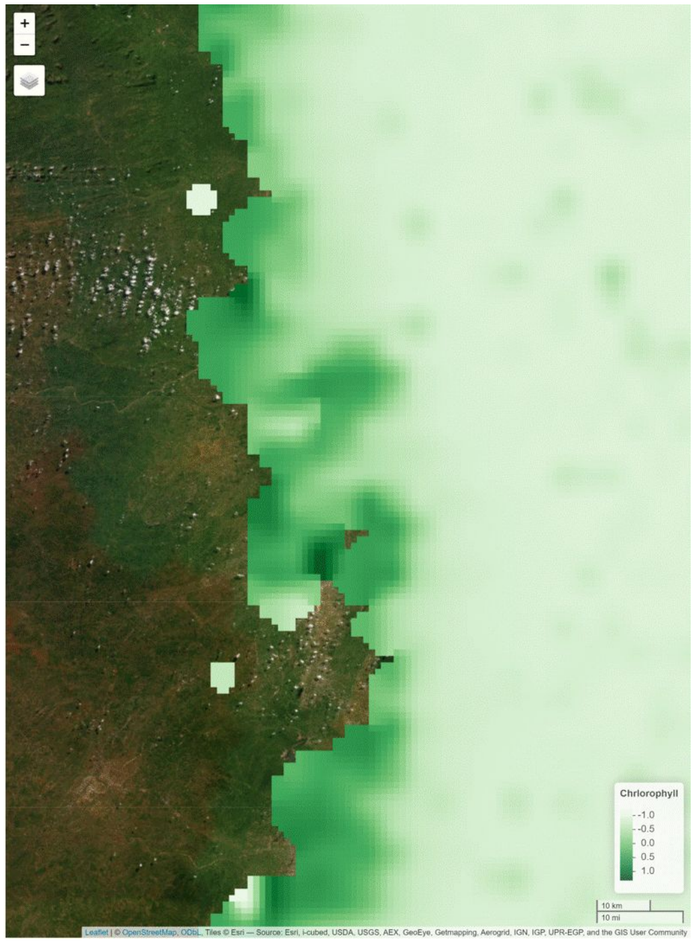
Northern Coastal Mozambique

Super diverse, climate-resilient coral reefs supporting community livelihoods

- Supporting creation of a marine protected area; informing community fisheries management
- Combines satellite and field data collected by WCS with NatureMetrics' eDNA data to create ecosystem condition indices



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Eastern Chimpanzee Conservation Areas, Uganda and Tanzania

Core habitat for chimpanzees and essential natural resources for local communities

- Monitoring threats to chimpanzees and their habitats across core populations in their eastern range
- Supporting village and district land use planning, local payment for ecosystem services programs, and protected area law enforcement
- Integrates Planet data into implementation of National Chimpanzee Conservation Action Plans

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Terai Arc Landscape, Nepal

Integrated freshwater-grassland habitat key for endangered Bengal tigers

- Supporting habitat management in a UN Global Restoration Flagship for threatened and endangered megafauna
- Informing effective policies and local landscape stewardship practices for tiger preservation
- Insights on freshwater dynamics and grassland vegetation with new applications of Planet data

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Gunung Naning Protection Forest, Indonesia

Home to endangered species, including 10-20% of the entire population of Bornean Orangutans

- Supporting the creation of no-take zones, evaluating species conservation status, and empowering local ecosystem stewards
- Combine Planet data with bioacoustics and camera traps to gain insights about habitat and wildlife

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Sierra Madre Occidental Ecoregion, Mexico

Preserving old-growth forests to protect thick-billed parrot and other species

- Rapidly detecting logging activities affecting parrot nesting and foraging sites
- Designing conservation strategies by characterizing old-growth forests, tracking wildfire spread and assessing burn severity, and identifying bark beetle outbreaks

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Upemba National Park, DRC

Saving a “forgotten park,” its endangered wildlife, and the people who depend on it

- Restoring one of DRC’s richest biodiversity areas, which is the last remaining site of free-roaming zebras in the country and home to savanna elephants
- Protecting ranger lives and livelihoods with near-real time data
- Incorporates Planet data into a monitoring and conservation response system to address urgent risks from poaching, armed groups, encroachment, and mining

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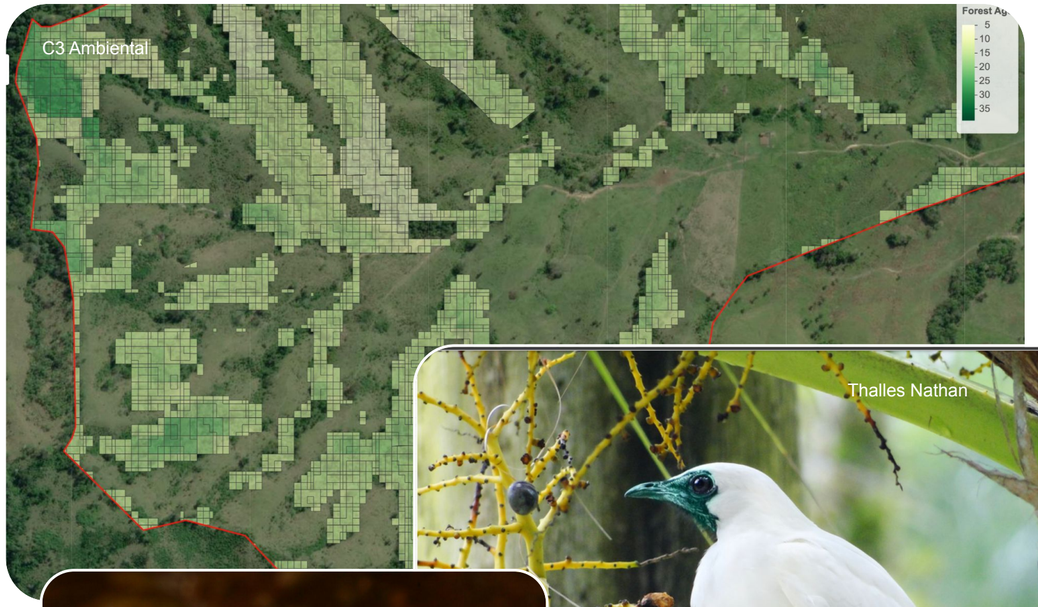
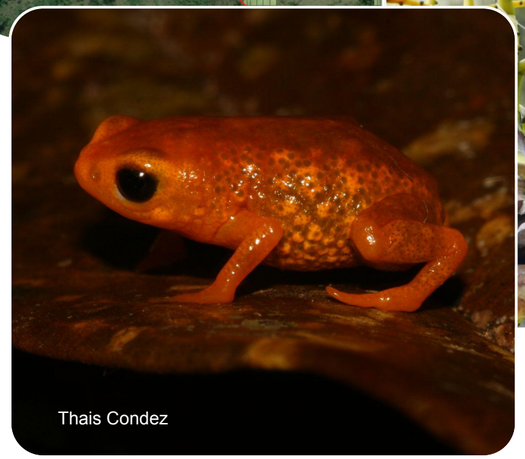
Atlantic Forest, Brazil

Valuing and scaling community-led nature restoration and conservation to reverse loss in an imperiled ecosystem

- Partnering with smallholders to protect remnant forest and restore degraded areas, securing community financial incentives for this stewardship
- Monitoring habitat for threatened Atlantic forest species, jaguar, araponga and endemic frogs
- Combines Planet data with on-the-ground biodiversity and ecosystem service monitoring aligned with nature stewardship methodologies





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Sky Aelans, Solomon Islands

Securing Indigenous governance for unique threatened forests and mangroves

- Tracking illegal logging, roads, and mining that displace endemic and critically endangered species
- Integrates Planet data in an Indigenous Guardian Connector platform to coordinate conservation action
- Protecting habitat of at-risk sea turtles, monkey-faced bats, and sea eagles

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Maya Forest Mosaic, Belize

Securing globally recognized cultural and natural heritage through long-term, collaborative stewardship

- Tracking threats to nature and globally endangered species in a region renowned for jaguars, endangered river turtles, and white-lipped peccaries
- Informing stakeholder collaboration and the co-design of effective, local-to-national conservation strategies
- Integrates Planet data into long-term biodiversity monitoring, community stewardship, and climate resilience strategies on protected and productive landscapes

26
Major Rivers

9 critically endangered,
32 endangered &
77 Vulnerable (IUCN, 2016)

69
Protected Landscapes

54
Permanent Sample
Research Plots

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Sacred Headwaters, Ecuador

Activating biocultural ancestral stewardship in Amazonian headwaters home to endangered wattled curassow and jaguars

- Supporting validation of biocultural stewardship across Indigenous territories
- Underpinning an early warning system to address environmental threats
- Combines Planet data with community-led monitoring to quantify tokenized units of ‘biocultural jaguar credits’


Joel Koupermann


Regen Network


Amazon Sacred Headwaters

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Rangeland Consulting & Services

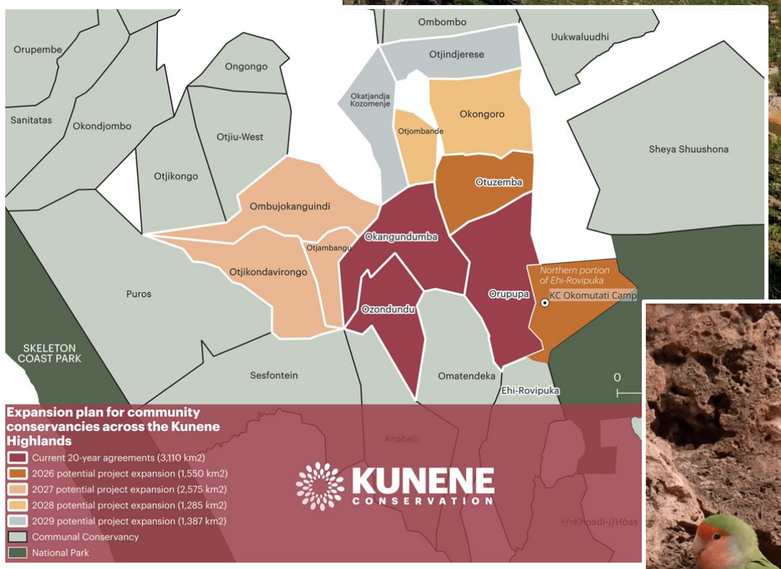
Kunene Highlands, Namibia

conserve GLOBAL

Cultivo

Allying with communities to generate sustainable livelihoods, protect wildlife, and restore grasslands

- Assisting community conservancies to develop and maintain sustainable livelihoods through restoration and managed grazing practices
- Reducing erosion, restoring plant diversity and abundance, and protecting endemic rosy-faced lovebirds and other threatened wildlife
- Incorporates Planet data into analytics for in-field teams and donors, to help verify sustainable livelihoods



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West Java and Borneo, Indonesia

Helping local communities and forest farmers restore critical habitat and protect two national parks, home to endangered endemic species

- Supporting 14 forest farmer groups to plant native species and monitor restoration success around Mount Halimun Salak National Park
- Monitoring forest cover and biodiversity protection in two national parks known for the Javan lutung, endangered Javan hawk-eagle, and endangered Bornean orangutans
- Combines Planet data with regular patrols and community capacity for sustainable forest management

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Western Ghats Biodiversity Hotspot, India

Bringing back montane grasslands and forests that sustain the Nilgiri pipit and other rare birds

- Informing the efficacy and practice of restoration efforts and assessing the impact on vulnerable species
- Tracking invasive trees damaging sensitive high-altitude grasslands, and monitoring endemic birds
- Uses Planet data in concert with bioacoustic sensing to understand species-habitat interactions and improve restoration design and implementation with a range of stakeholders

Actively restored site | Benchmark (undisturbed forest) site

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Sapi Reserve, Zimbabwe

Securing biodiversity through responsible ecotourism, data-driven conservation, and restoration interventions

- Collaboratively restoring a UNESCO World Heritage Site and Biosphere Reserve through species reintroductions, conservation tourism, and comprehensive conservation planning and management
- Uses Planet data to map and qualify habitat, establish monitoring indicators, and assess carrying capacity

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Lobéké - Dzanga Sangha Conservation Complex, Cameroon and CAR

Supporting a network of protected areas with an early warning system for zoonotic diseases to safeguard the health of wildlife, communities, and the ecosystems they rely on

- Reducing the risk of disease spread and increasing forest security for local communities and vulnerable African forest elephants, gorillas, and sitatunga

- Leverages Planet data to improve biodiversity monitoring, design early warning systems, and empower local communities


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Mountain Bongo Habitat, Kenya

Monitoring the last remaining habitats of the Critically Endangered mountain bongo

- Monitor mountain bongo habitat and raise awareness about its condition among policymakers and communities
- Identify and track threats to remaining mountain bongo populations
- Leverage Planet data for conservation and adaptive management strategies for rewilding and protecting remnant mountain bongo populations

Mountain bongo habitat; Wilhelm Klave via Wikipedia

Mount Kenya Wildlife Conservancy

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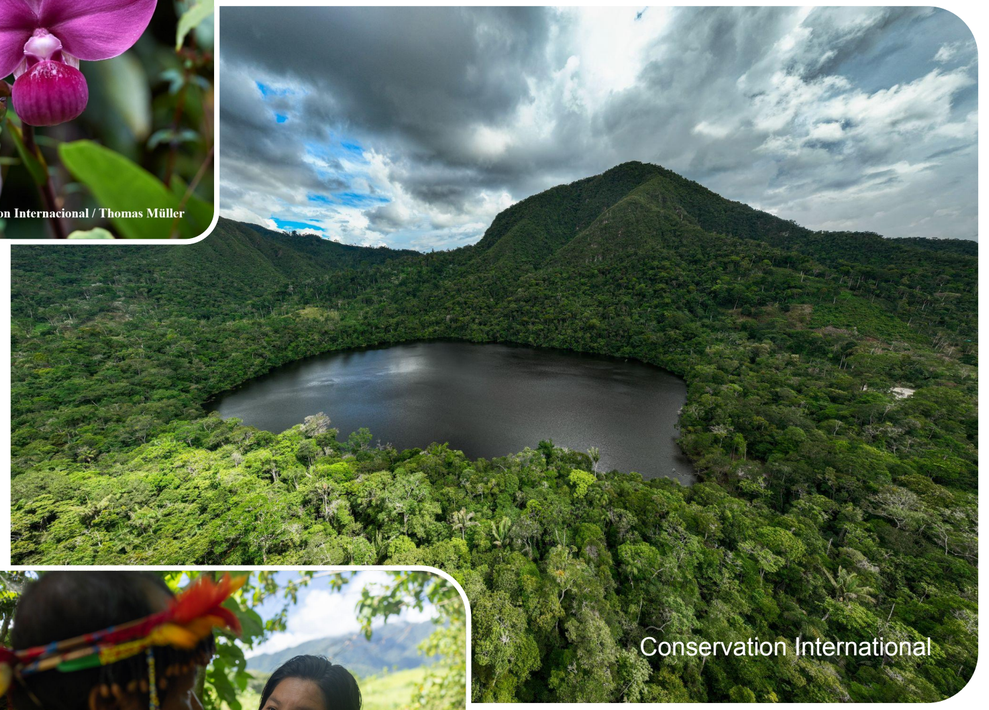
Alto Mayo, Peru

CONSERVACIÓN INTERNACIONAL Perú

Strengthening ancestral cultures, participatory management, and durable conservation across protected areas and Indigenous communities

- Enhancing deforestation monitoring and protection for the Alto Mayo Protection Forest, home to more than 1,300 registered orchid species, including the Kovachii orchid
- Restoring cultural traditions and ecosystems with 16 Awajún Indigenous communities through sustainable economic programs like carbon credits and community nurseries
- Incorporates Planet data into control and surveillance plans tracking ecosystem threats, and supports monitoring and evaluation of habitat for endangered species, including the San Martín titi monkey, Peruvian yellow-tailed woolly monkey, and upper Amazon stubfoot toad



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Namuli, Mozambique

Developing sustainable local economies to reduce deforestation, preserve irreplaceable vulnerable biodiversity, and improve nature-based wellbeing

- Reconciling rural development and biodiversity conservation through economic opportunities that reduce deforestation and restore biodiversity, including REDD+ and sustainable agriculture
- Helping establish a Community Conservation Area in the Mt. Namuli Key Biodiversity Area, protecting threatened and endemic species
- Use Planet data to monitor forest areas, track threats to habitat, and promote restoration and sustainable local economic options

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Bentarum and Mendawak, Indonesia

Defending customary and unprotected forests that Critically Endangered Bornean orangutans and Dayak communities depend on

- Conserving highly diverse forests by strengthening Indigenous land tenure, mitigating active threats, and establishing multi-stakeholder forest management agreements and climate-smart farming
- Planet data support forest monitoring, legal recognition of community-managed areas, and rapid risk mitigation of threats to forest biodiversity

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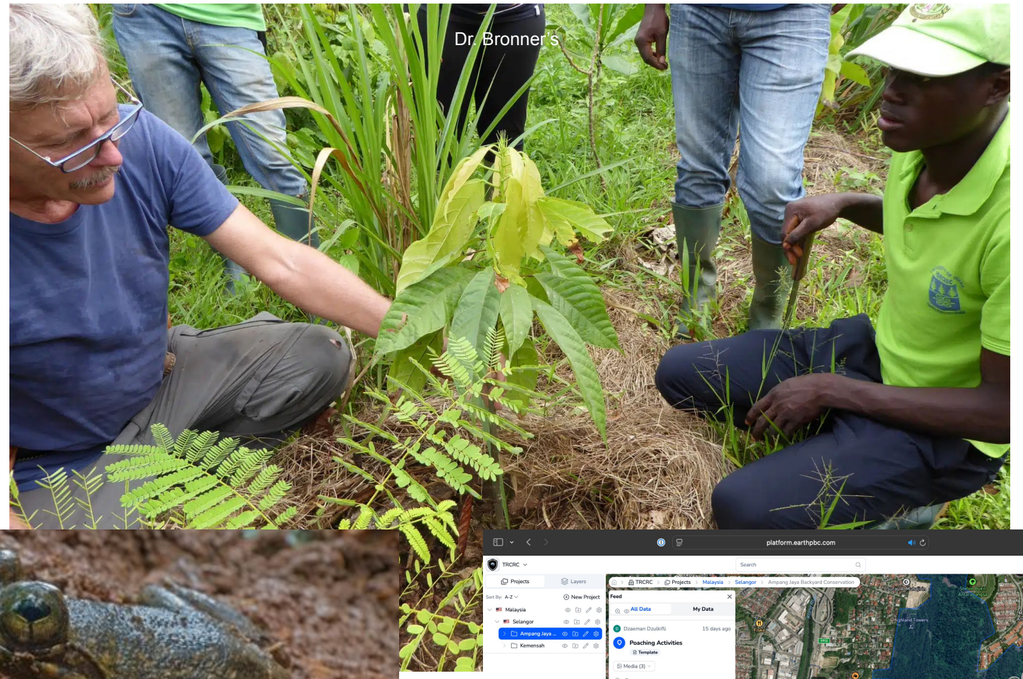
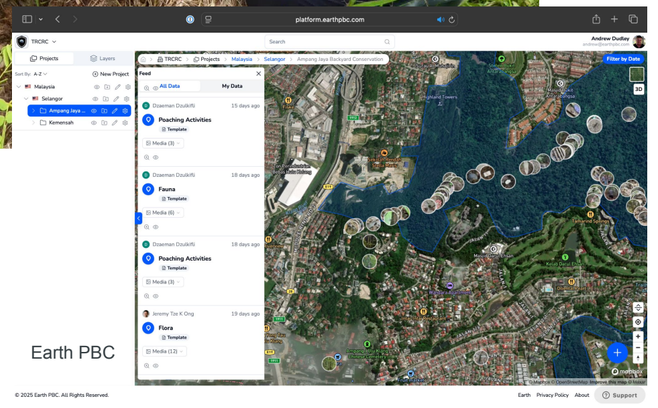
Serendipalm Landscape, Ghana

Maintaining functional habitat corridors to the Atewa Range Forest Reserve through biodiverse agroforestry systems

- Fostering high-biodiversity, dynamic agroforestry for 300 households that serves as a conservation corridor for critically endangered species like the Atewa slippery frog that depend on the Atewa Key Biodiversity Area and its surroundings

- Draws on Planet data for agroforestry design, adaptive management, and reporting and disclosure under environmental trade policies within the user-driven Earth Platform





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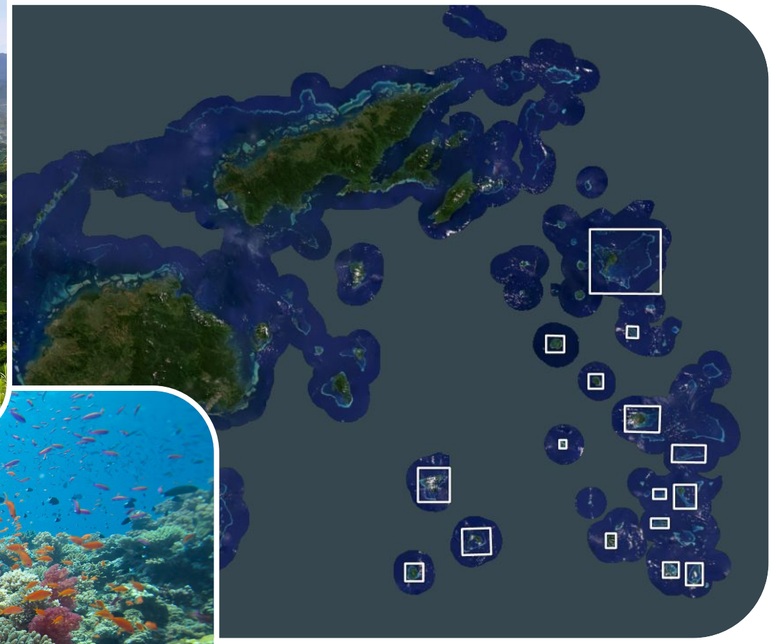
Lau Seascape, Fiji

CONSERVATION INTERNATIONAL

Increasing the resilience of globally significant coral reefs through community science and management

- Partnering with communities on 19 islands to assess climate vulnerabilities and meet the goals of the Lau Seascape Strategy
- Establishing sustainable planning and management for improved food security, resilient development and conservation of reef biodiversity
- Incorporates Planet data for rapid detection and response to coral bleaching, integrating with citizen science surveys for more precise and actionable insights.



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Ebo Forest, Cameroon

Mitigating urgent threats to endangered gorillas, forest elephants, chimpanzees, and the communities whose livelihoods depend on the forest

- Reducing the negative effects of logging activities on wildlife populations and local communities
- Documenting the integrity of ecosystems and the health of endangered species populations
- Draws on Planet data to track logging and other drivers of forest change in sensitive areas, assess it impacts, inform conservation strategies, and engage stakeholders for better outcomes

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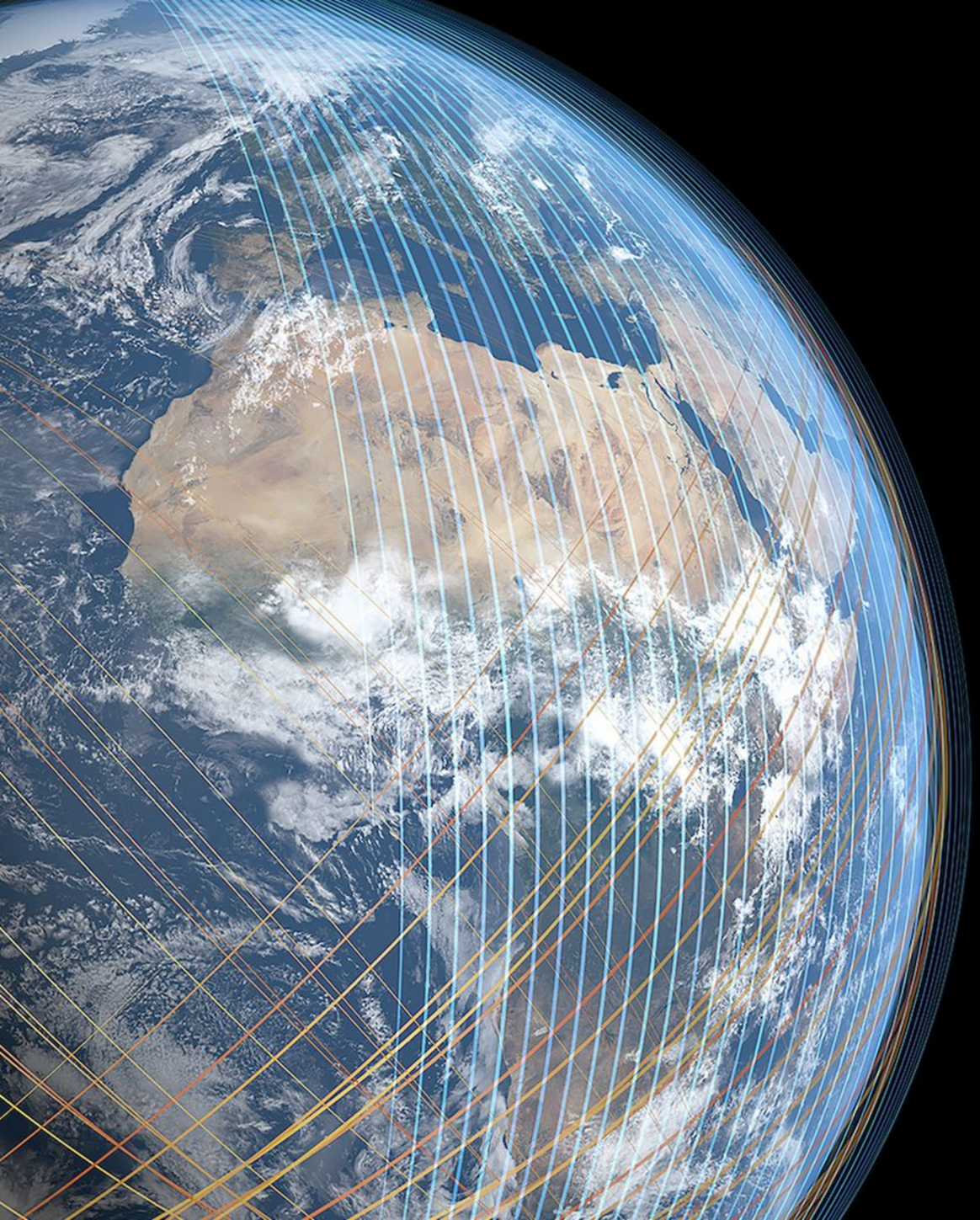

Thank you