HAC Matchmaking Fair
Google Earth Engine

Tanya Birch
tanyak@google.com

A planetary-scale platform for Earth science data & analysis

Powered by Google's cloud infrastructure

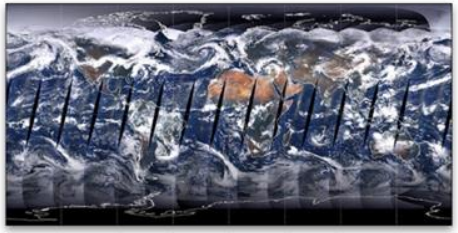
▶ Watch Video

Launched in 2010 at UNFCCC COP16 International Climate Conference

Google Earth Engine

Data Catalog

The world's largest archive of open Earth data at your fingertips



1000+ curated geospatial datasets, including near-real-time satellite imagery

+

Computation Platform

A powerful tool to analyze and visualize Earth data at scale

Parallel processing for speed and scale, with machine learning built in.

+

Collaborative Ecosystem

100,000 sustainability-focused monthly active users (and growing)

A rich user community focused on sustainability, social and environmental impact

Over

700,000

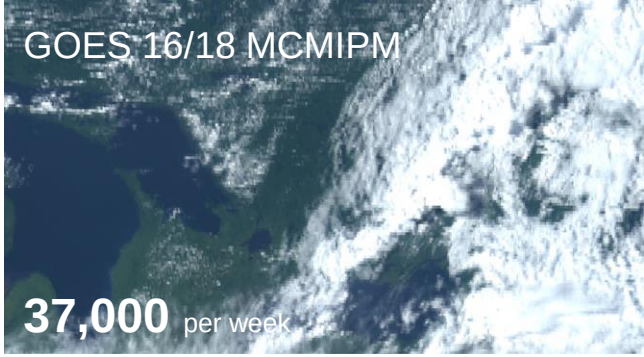
new images

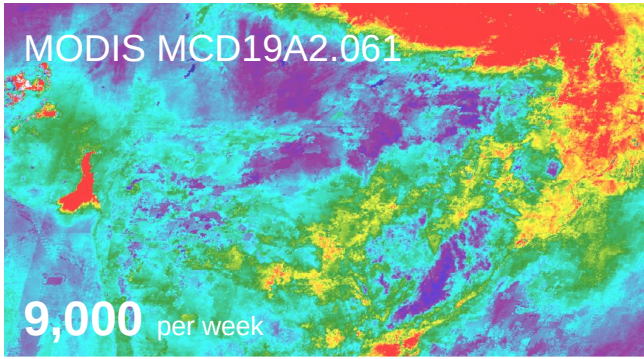
added

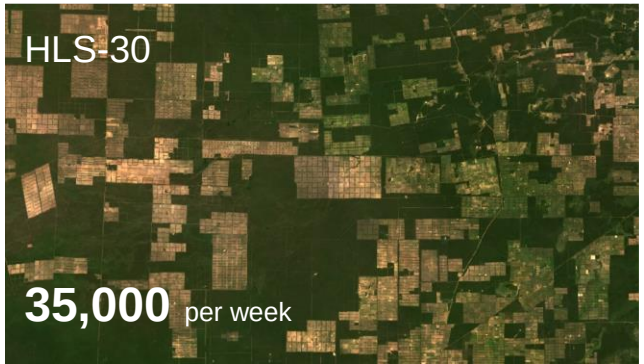
every week

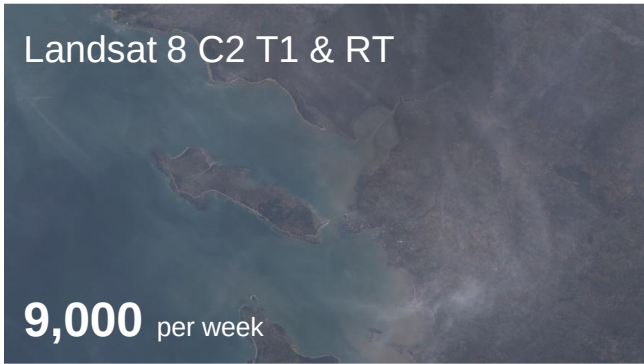
Updating every

15 minutes







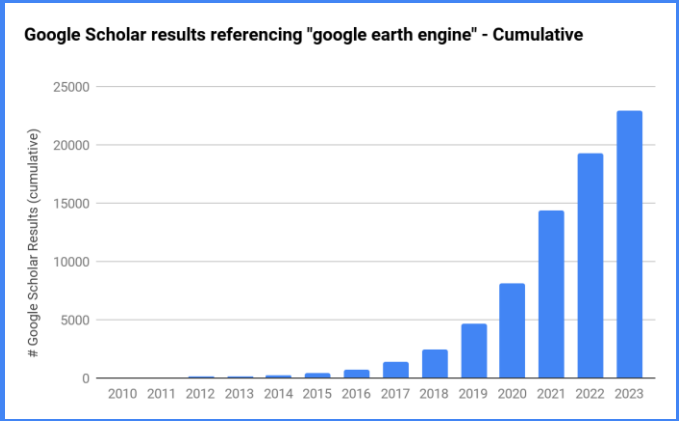


100k+

Scientists actively using Earth Engine

38,000+

Scientific papers (*link*)



nature sustainability

Widespread Amazonian dark earth in the Xingu Indigenous Territory

Science of Remote Sensing

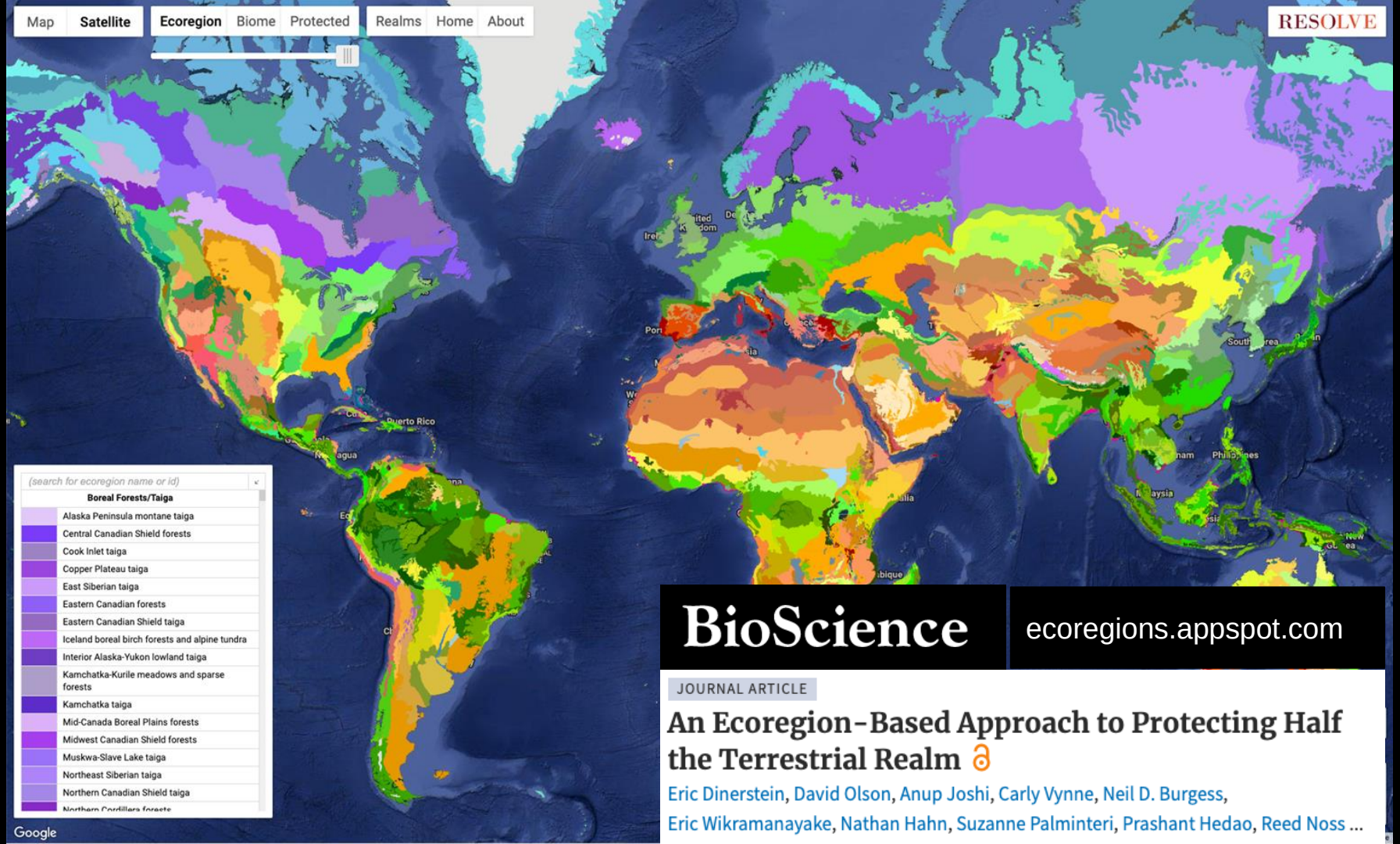
Revisiting the 2023 wildfire season in Canada

nature

More than 17,000 tree species are at risk from rapid global change

nature

Satellite mapping reveals extensive industrial activity at sea



BioScience

ecoregions.appspot.com

JOURNAL ARTICLE

An Ecoregion-Based Approach to Protecting Half the Terrestrial Realm

Eric Dinerstein, David Olson, Anup Joshi, Carly Vynne, Neil D. Burgess, Eric Wikramanayake, Nathan Hahn, Suzanne Palminteri, Prashant Hedao, Reed Noss ...

Earth Engine analysis supports scientific justification for HAC

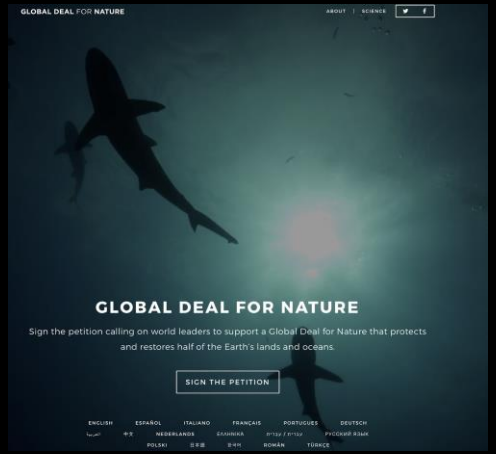
Specific, actionable targets set for 2030 and 2050.

SCIENCE ADVANCES | REVIEW

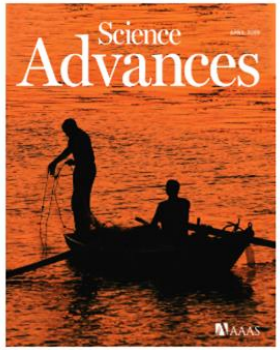
SCIENCE POLICY

A Global Deal For Nature: Guiding principles, milestones, and targets

E. Dinerstein[1]*, C. Vynne[1], E. Sala[2], A. R. Joshi[3], S. Fernando[1], T. E. Lovejoy[4], J. Mayorga[2,5], D. Olson[6], G. P. Asner[7], J. E. M. Baillie[2], N. D. Burgess[8], K. Burkart[9], R. F. Noss[10], Y. P. Zhang[11], A. Baccini[12], T. Birch[13], N. Hahn[1,14], L. N. Joppa[15], E. Wikramanayake[16]



HIGH AMBITION COALITION FOR NATURE & PEOPLE

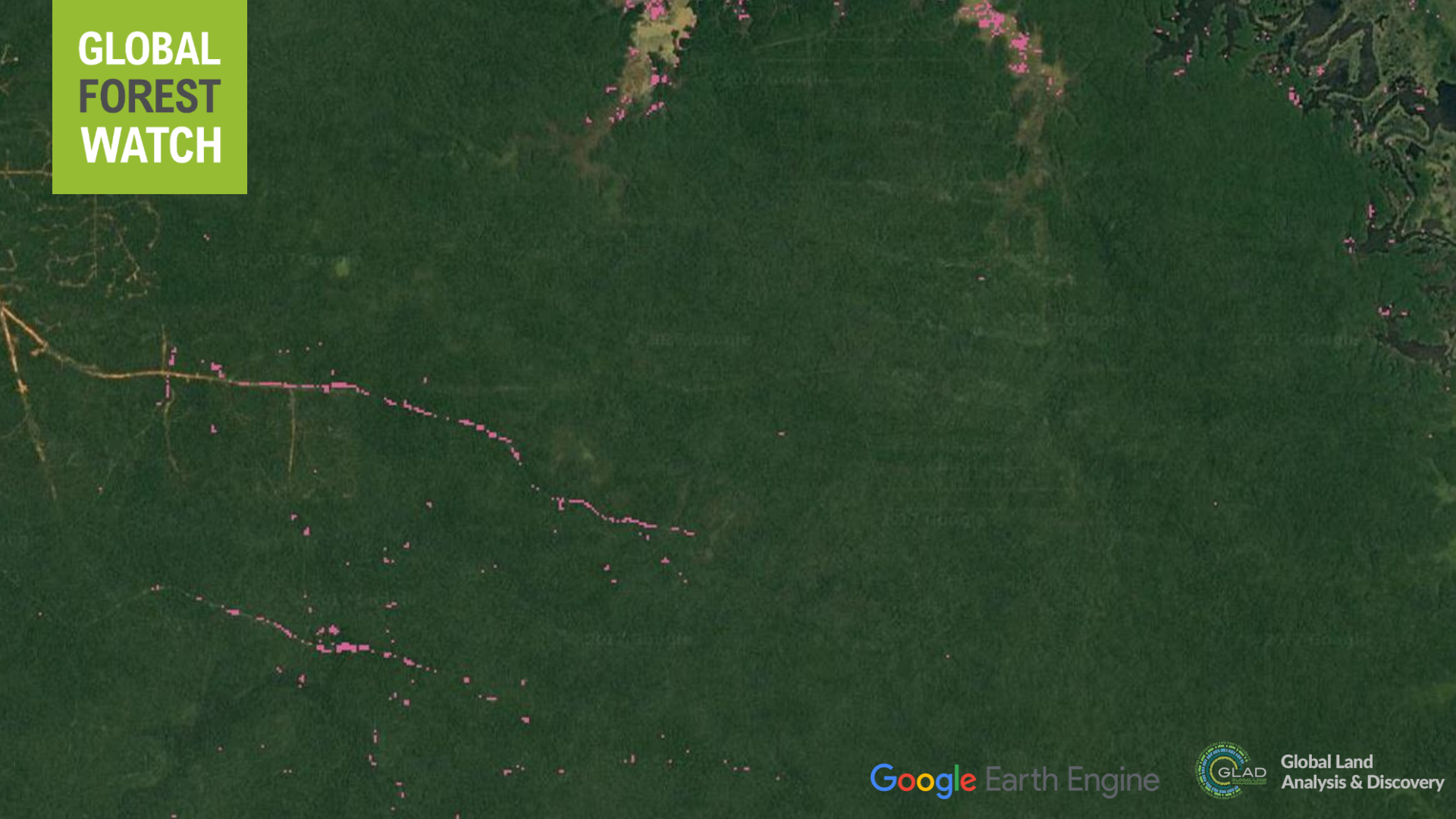


Multiple

A Global Deal For Nature: Guiding principles, milestones, and targets

The Global Deal for Nature (GDN) is a time-bound, science-driven plan to save the diversity and abundance of life on Earth. Pairing the GDN and the Paris Climate Agreement would avoid catastrophic climate change, conserve species, and secure essential ecosystem services.

Read more | Download


GLOBAL
FOREST
WATCH
Google Earth Engine
GLAD
Global Land
Analysis & Discovery

Indigenous forest guardians in Peru reduced deforestation **by 52%** in one year

Slough et al. 2021

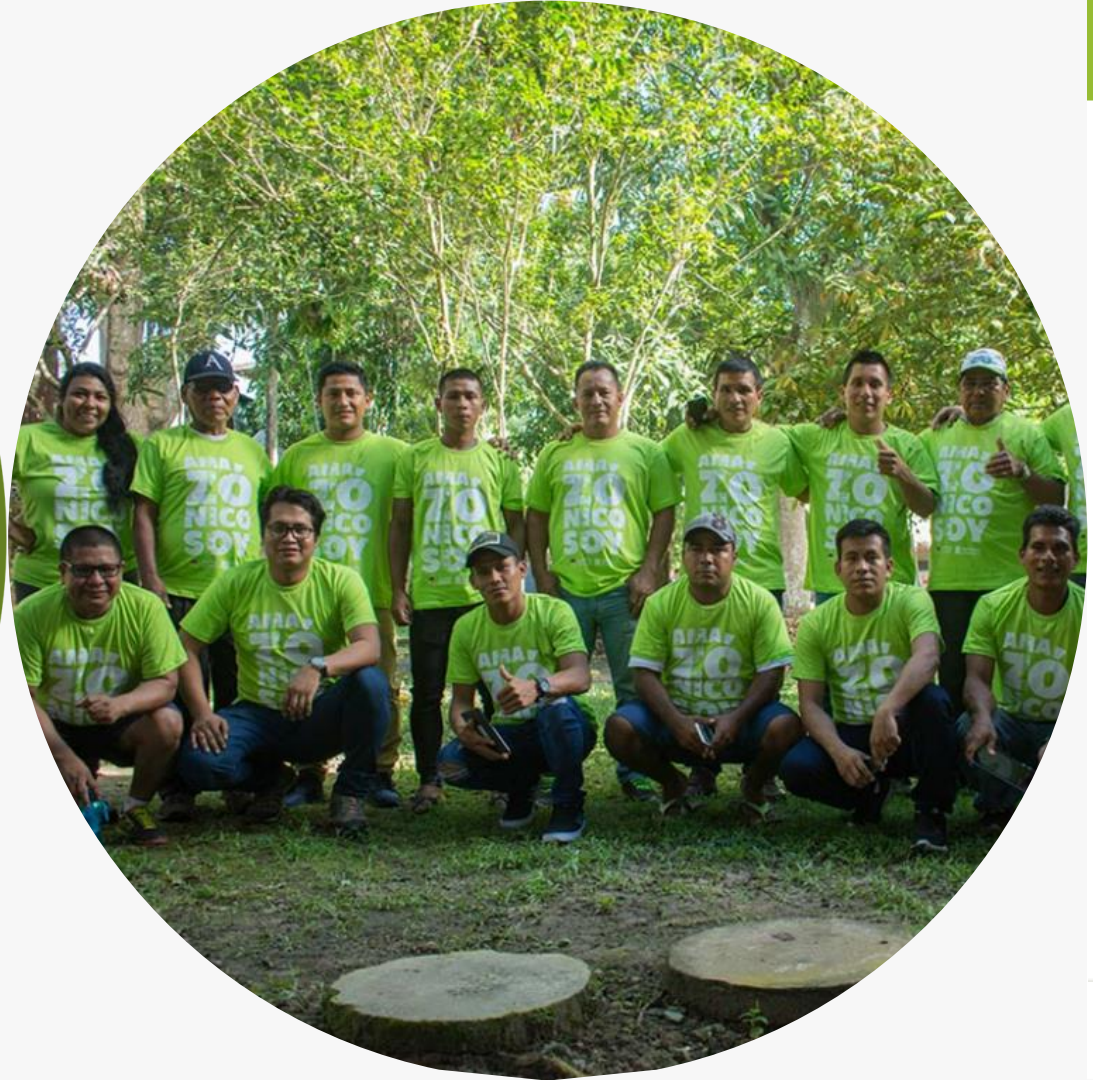
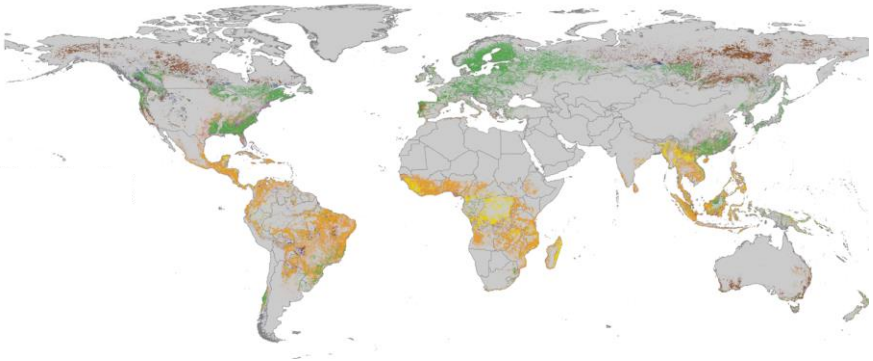


Photo: ORPIO

Next Generation Drivers of Forest Loss

Google DeepMind and World Resources Institute



A spatially explicit understanding of the drivers of forest loss is fundamental for decision-makers to develop forest conservation strategies.

- Global map of the dominant driver of forest loss:
  - 2001-2022 (to be updated annually)
  - 1 km spatial resolution
- Deep learning model using:
  - Satellite imagery (Landsat, Sentinel-2),
  - Global forest change product (Hansen et al. 2013)
  - Ancillary biophysical and population data
- **Google Earth Engine** used for training and validation sampling, interpretation, and analysis; data processing & extraction
- Preliminary results– expected publication and data release in coming months

UNFCCC REDD+ Reporting by Countries

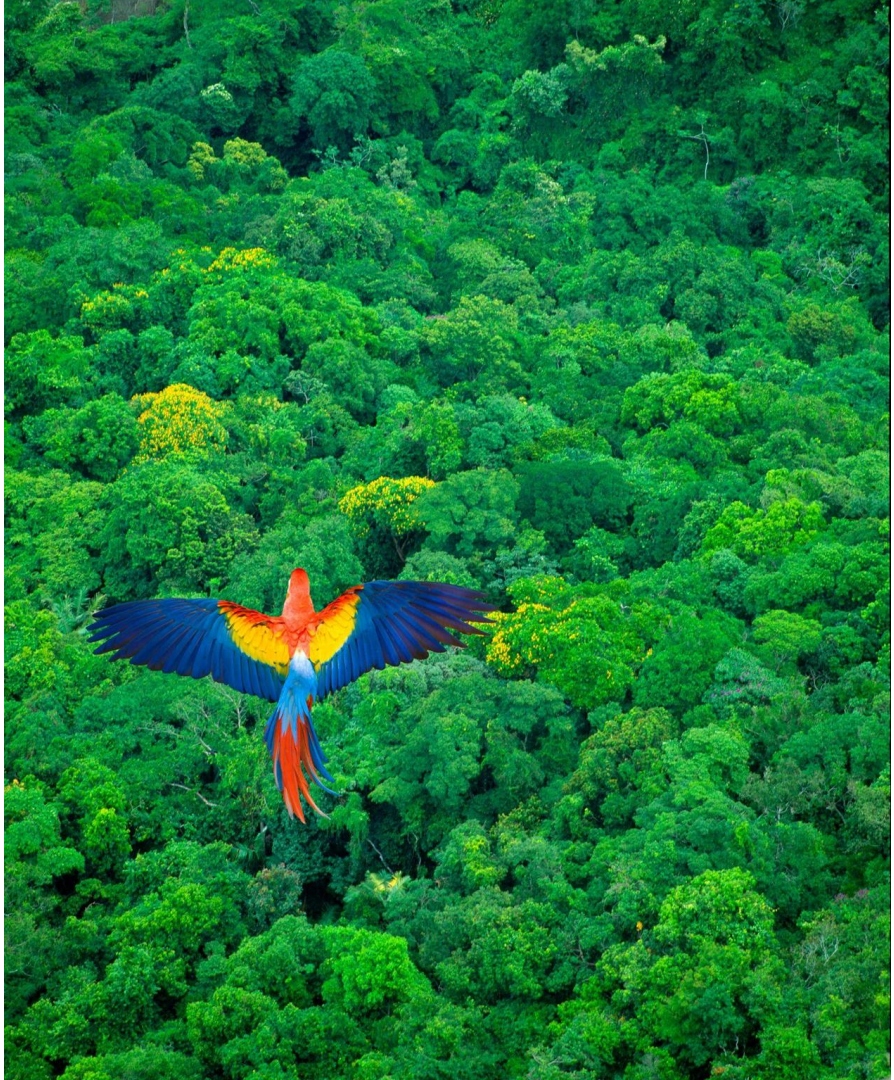
57 Countries

are using Google Earth Engine, Google Earth, and FAO tools built on this technology for jurisdictional REDD reporting to UNFCCC.

Source

GREEN CLIMATE FUND

FOREST CARBON PARTNERSHIP FACILITY



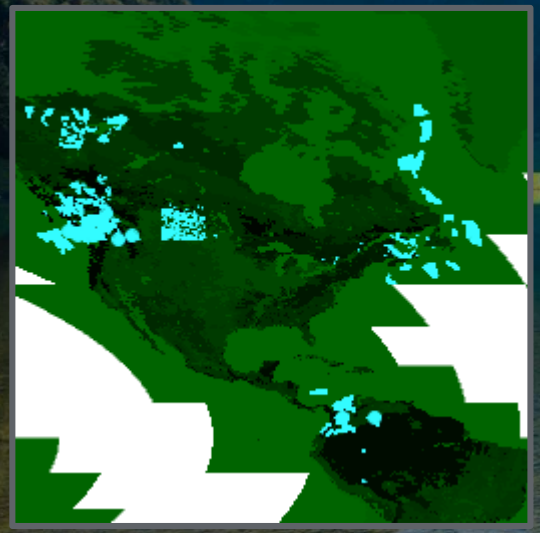
Global Biodiversity Framework
Relevant Datasets enabled by Earth Engine

Ecosystem Integrity Index (Hill et.al.)
Species Habitat Index (Jetz et al)
Species Protection Index (Jetz et al)
Species Information Index (Jetz et al)
Global Human Footprint (Sanderson et.al)
Global Human Modification (Kennedy et. al)
RESOLVE Ecoregions 2017 (Dinerstein et. al)
Allen Coral Atlas 2.0 (Lyons et al)
Global Mangrove Forests Distribution (Giri et al)
Intact Forest Landscapes (intactforests.org)
Threat Monitoring of Key Biodiversity Areas (Beresford et al)
Global Forest Change (Hansen et.al)
Numerous Land Use / Land Cover datasets
Index of Species Rarity Sites, High Biodiversity Areas, Large Mammal Landscapes, Intact Wilderness and Climate (multiple first authors)
…and many more!

Global Biodiversity Framework

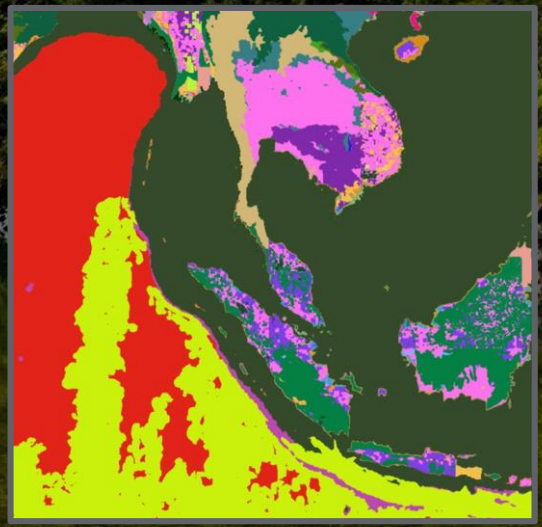
New Datasets added to Earth Engine

New!



World Database of OECMs

Science Based Targets Network Natural Lands Map



IUCN Global Ecosystem Typology L3

High Ambition Coalition for Nature & People

Google is official “Supporter” of HAC and member countries