

A scenic landscape of a mountain valley. In the foreground, a calm lake reflects the surrounding greenery and the sky. The middle ground is filled with dense, lush green forests covering the slopes of the mountains. In the background, high, rugged mountain peaks are visible, some with patches of snow or light-colored rock. The overall atmosphere is serene and majestic.

HAC Matchmaking Fair Google Earth Engine

Tanya Birch
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A planetary-scale platform for Earth science data & analysis

Powered by Google's cloud infrastructure

► Watch Video

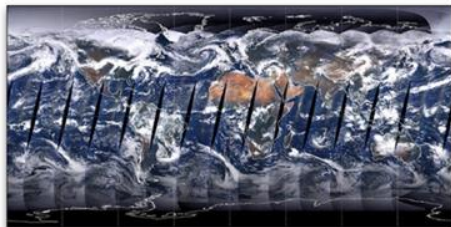


Launched in 2010 at UNFCCC COP16 International Climate Conference



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



Sentinel-2 L2A

100,000 per week

Sentinel-2 L1C

100,000 per week

HLS-30

35,000 per week

GOES 16/18 MCMIPM

37,000 per week

MODIS MCD19A2.061

9,000 per week

Landsat 8 C2 T1 & RT

9,000 per week

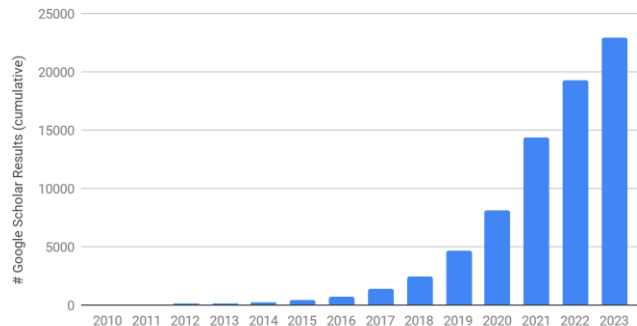
100k+

Scientists actively
using Earth Engine

38,000+

Scientific papers ([link](#))

Google Scholar results referencing "google earth engine" - Cumulative



nature sustainability

Widespread Amazonian dark earth in the Xingu Indigenous Territory

Science of Remote Sensing

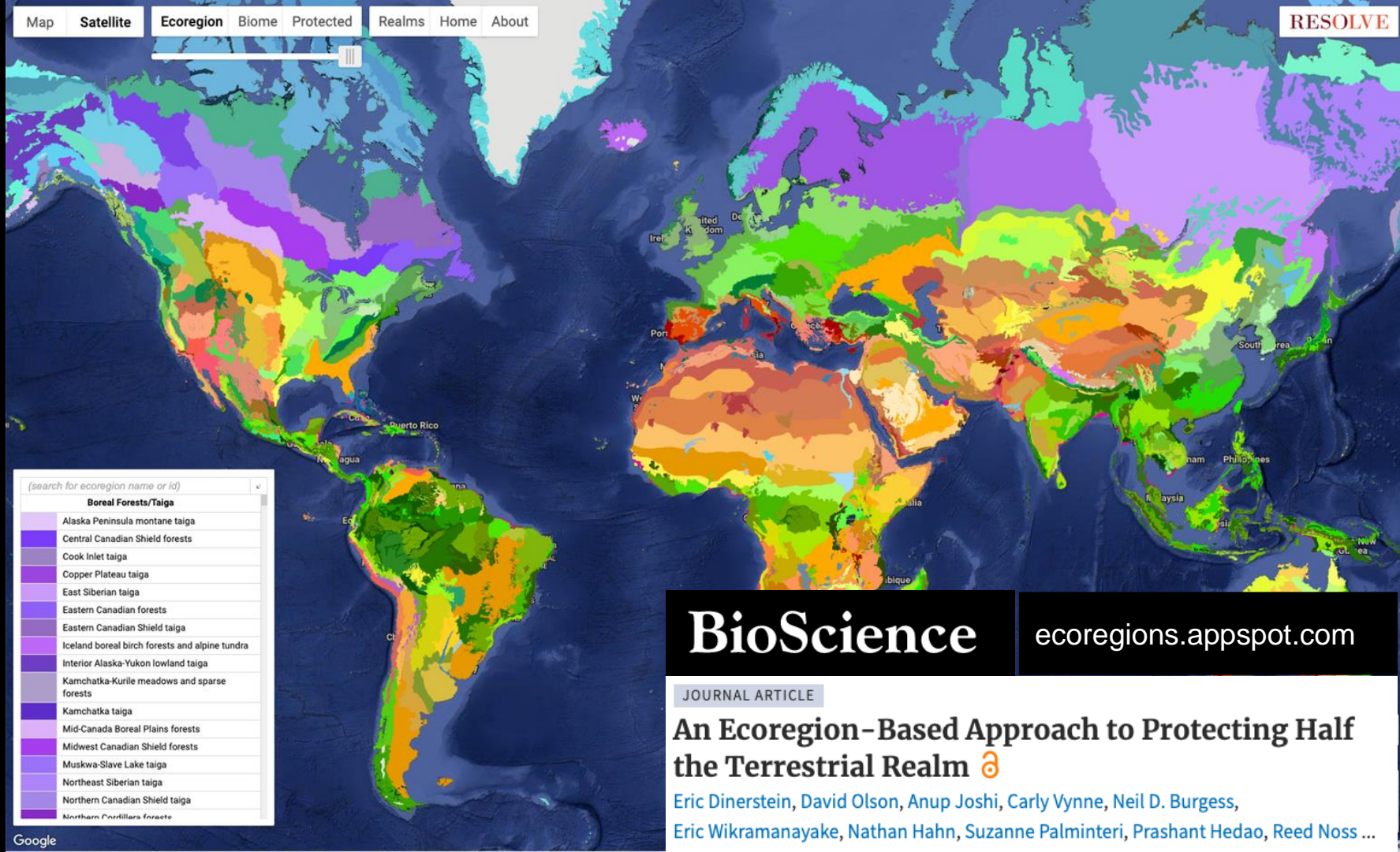
Revisiting the 2023 wildfire season in Canada

nature

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

nature

Satellite mapping reveals extensive industrial activity at sea



(search for ecoregion name or id)

Boreal Forests/Taiga

- Alaska Peninsula montane taiga
- Central Canadian Shield forests
- Cook Inlet taiga
- Copper Plateau taiga
- East Siberian taiga
- Eastern Canadian forests
- Eastern Canadian Shield taiga
- Iceland boreal birch forests and alpine tundra
- Interior Alaska-Yukon lowland taiga
- Kamchatka-Kurile meadows and sparse forests
- Kamchatka taiga
- Mid-Canada Boreal Plains forests
- Midwest Canadian Shield forests
- Muskwa-Slave Lake taiga
- Northeast Siberian taiga
- Northern Canadian Shield taiga
- Northern Cordillera forests

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

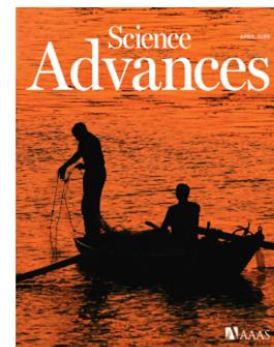
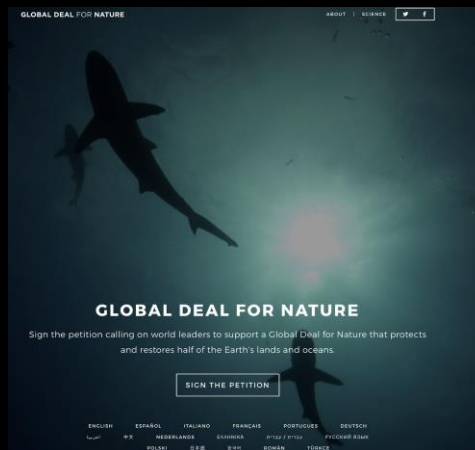
Specific, actionable targets set for 2030 and 2050.

SCIENCE ADVANCES | REVIEW

SCIENCE POLICY

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

E. Dinerstein^{1*}, C. Vynne¹, E. Sala², A. R. Joshi³, S. Fernando¹, T. E. Lovejoy⁴, J. Mayorga^{2,5}, D. Olson⁶, G. P. Asner⁷, J. E. M. Baillie², N. D. Burgess⁸, K. Burkart⁹, R. F. Noss¹⁰, Y. P. Zhang¹¹, A. Baccini¹², T. Birch¹³, N. Hahn^{1,14}, L. N. Joppa¹⁵, E. Wikramanayake¹⁶



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

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

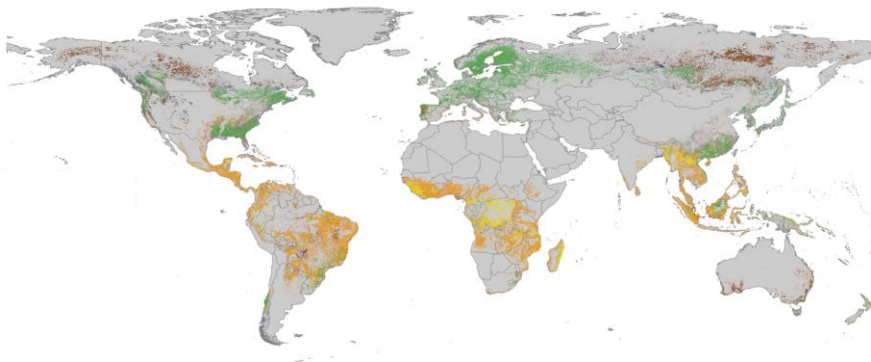
Slough et al. 2021

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

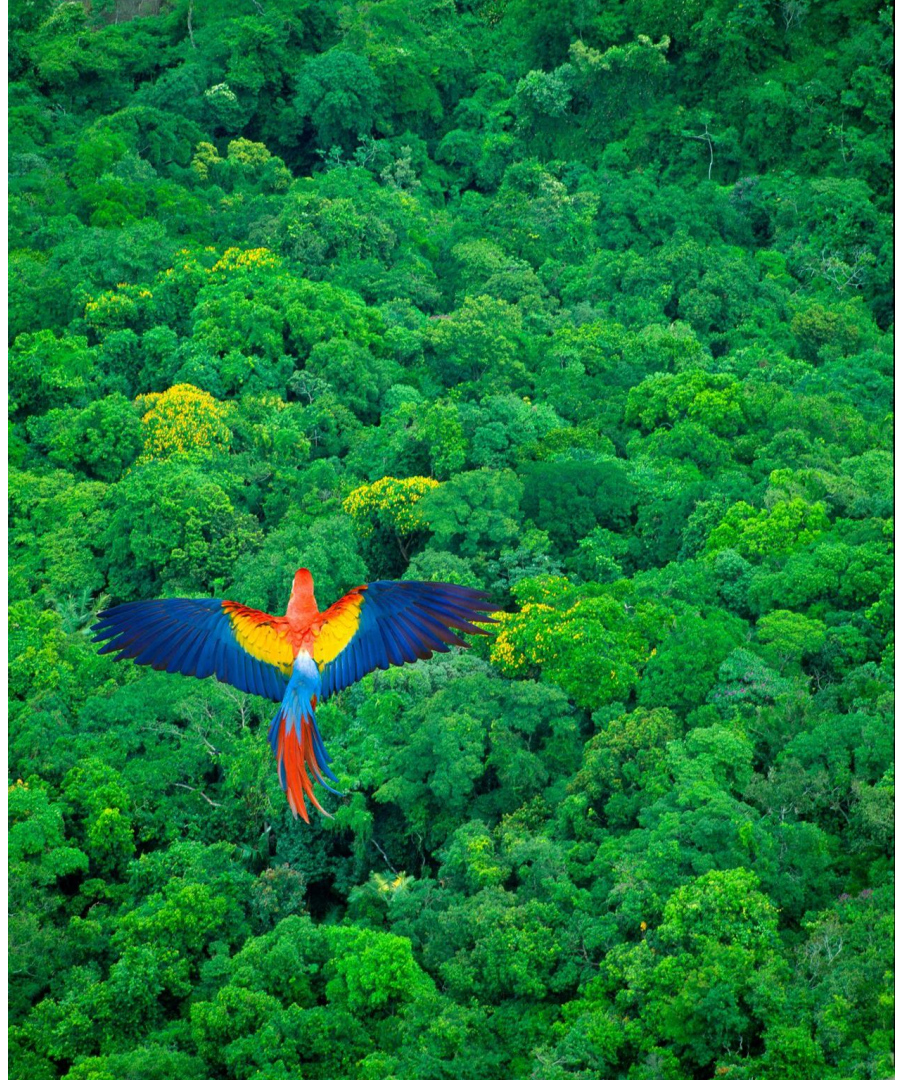
57 Countries

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

[Source](#)



GREEN
CLIMATE
FUND



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

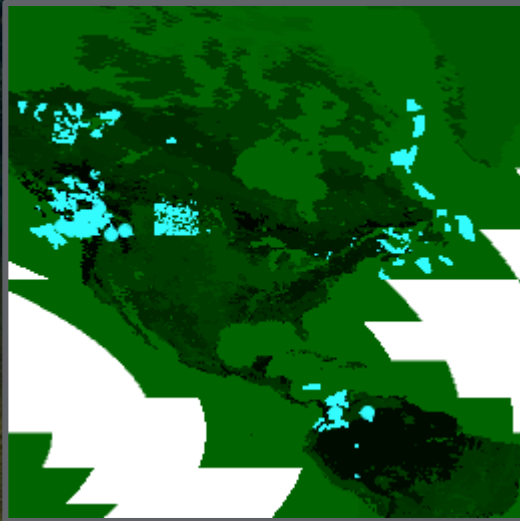
Index of Species Rarity Sites, High Biodiversity Areas, Large Mammal Landscapes,
Intact Wilderness and Climate (multiple first authors)

...and many more!

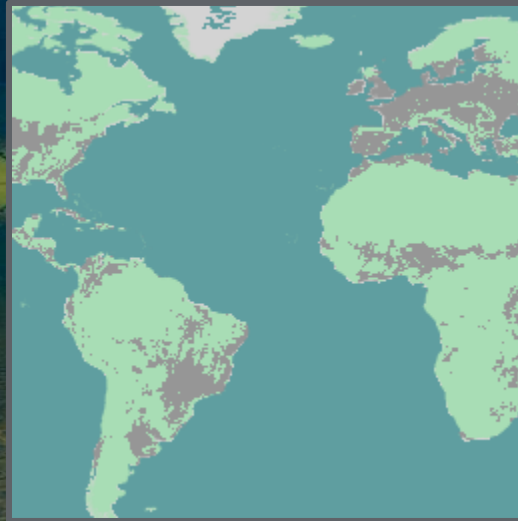
Global Biodiversity Framework

New Datasets added to Earth Engine

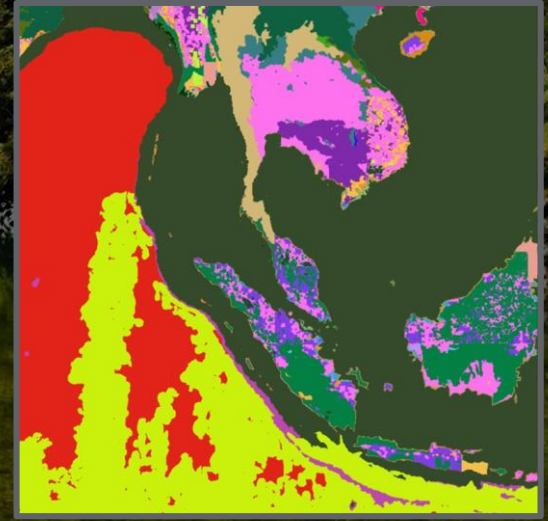
New!



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



HIGH AMBITION COALITION FOR NATURE & PEOPLE

THE HAC FOR NATURE & PEOPLE TOOLS



HAC 30x30 Matchmaking Platform

Our Supporters

GOOGLE EARTH ENGINE GEOSPATIAL DATA ANALYSIS PLATFORM FOR 30X30 TARGETS

Google Submitted 2024-04-06 01:39:57

Technical Theme 2 Theme 3 Theme 4 Theme 5

Offer description

Google Earth Engine is a computing platform that allows users to run geospatial analysis at scale on Google's infrastructure.

Google Earth Engine combines a multi-petabyte catalog of satellite imagery and geospatial datasets with planetary-scale analysis capabilities. Scientists, governments, NGO/IGOs, academia, industry and others use Earth Engine to detect changes, map trends, inform decisions and implement actions toward sustainable outcomes.

The Earth Engine catalog is one of the largest publicly available data catalogs, with 90+ petabytes of analysis-ready satellite imagery and 1,000+ curated geospatial datasets. It includes 50+ years of historical imagery, updated and expanded daily, at resolutions as fine as one meter per pixel. Examples include Landsat, MODIS, Sentinel-2, and Sentinel-1.

Examples

For over a decade, Google has supported scientific studies using Earth Engine to advance 30x30 science, including:

- Ecoregion-based Approaches to Protecting Half the Terrestrial Realm: <https://academic.oup.com/bioscience/article/67/6/534/3102935?login=false> Explore Ecoregions <https://ecoregions.appspot.com/>
- A Global Deal for Nature <https://www.globaldealfornature.org/>
- Global Safety Net, a blueprint on high conservation value regions to protect <https://www.globalsafetynet.app/>
- Half Earth Project Map: <https://map.half-earthproject.org/>
- GBF Indicators such as Ecosystem Integrity Index (EII): <https://www.biorxiv.org/content/10.1101/2022.08.21.504707v1.full> <https://medium.com/google-earth/map-of-life-indicators-adopted-in-un-biodiversity-framework-c91e2967c2f6>

Organisation's website

<https://earthengine.google.com/>

A scenic landscape photograph of a mountain valley. In the foreground, a calm lake reflects the surrounding environment. The right side of the lake is bordered by a dense forest of tall evergreen trees. The opposite shore is a lush green meadow. In the background, steep, rocky mountains rise, some with patches of snow or light-colored rock. The sky is overcast with soft, grey clouds. The overall color palette is dominated by greens, blues, and greys.

Thank you!

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tanyak@google.com