

Funded by



Deutsche  
Forschungsgemeinschaft  
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# Climate Data Collection and Analysis Workshop

February 26, 2024



# Today's Schedule

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## ***Day 1: Satellite Data Processing with Open-Source Tools***

09:30 – 10:00 Introduction and Computer Setup

10:00 – 10:30 Overview of Satellite Climate Data, with a focus on Hydrological Data

10:30 – 10:45 Tea/Coffee Break

**10:45 – 11:15 Introduction to Google Earth Engine for free online data processing**

**11:15 – 12:30 Practical Example – Collecting Climate Data for Specific Locations**

12:30 – 13:30 Lunch Break

13:30 – 14:30 Practical Example – Integrating Watershed Data and Mapping Climate Trends

14:30 – 14:45 Tea/Coffee Break

14:45 – 15:45 Practical Example – Creating Useful Visualizations and Consistent Reports

15:45 – 16:00 Wrap Up and Further Resources

# Shared Text

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I will include a couple of web links in this presentation  
– to access them more smoothly, I will copy/paste the  
text here:

<https://sharepad.io/live/whVgBRa>

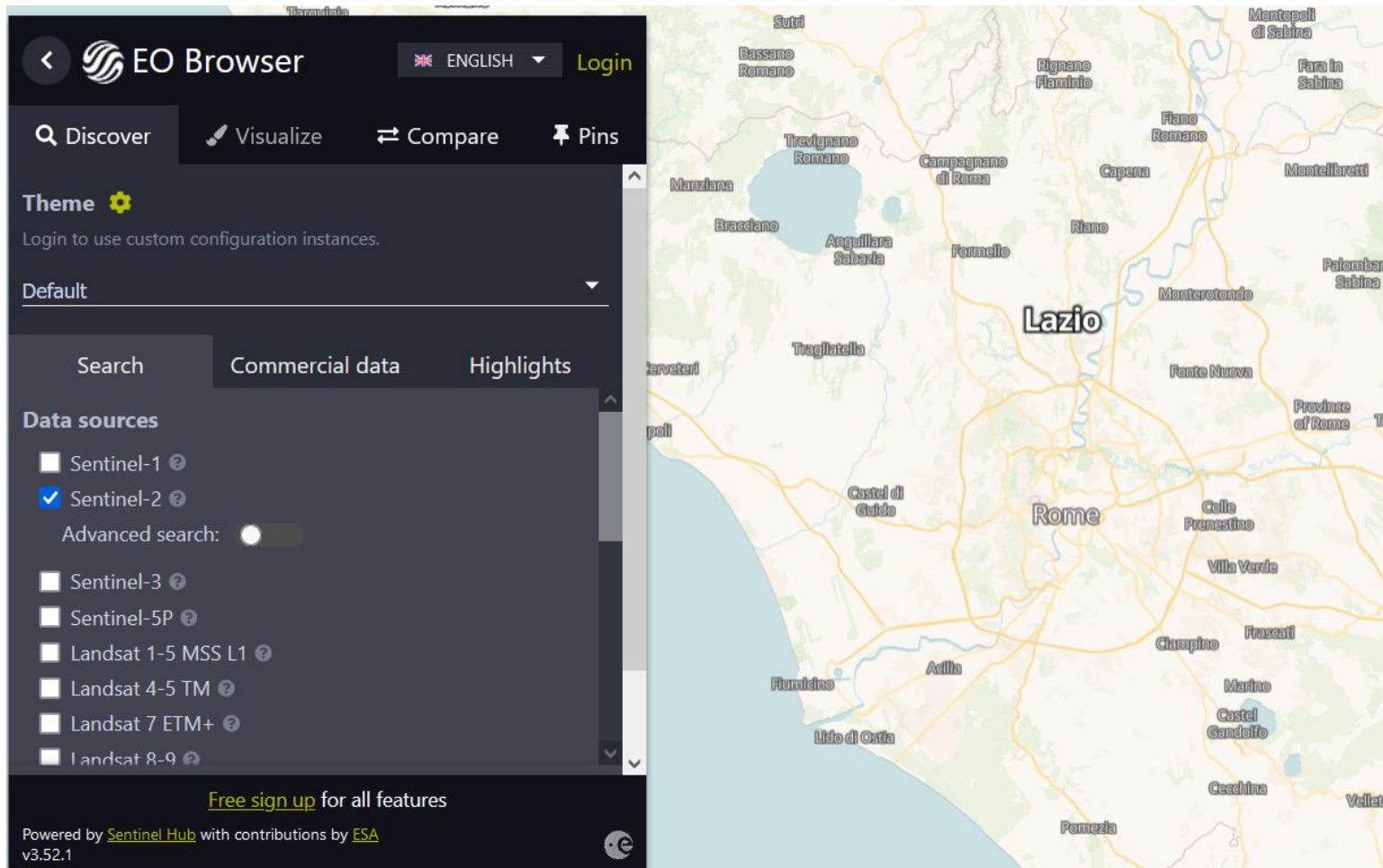
# Why Online Processing?

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- No Need for Large Computer
- Works with low internet access
- Many data sets available
- Can be accessed using programming languages or via a web browser

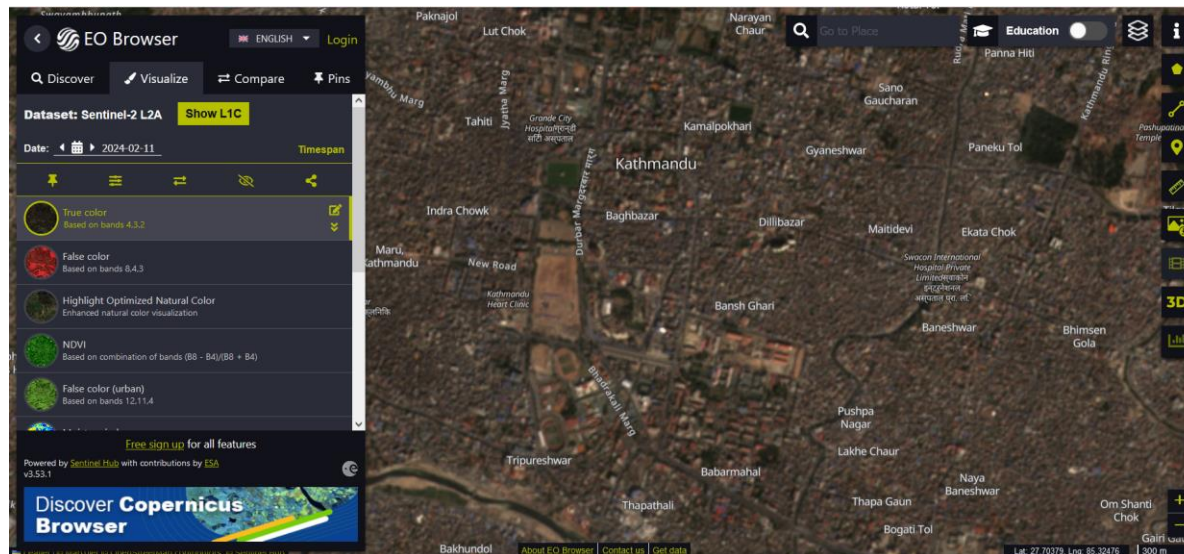


# Introduction to Online Data Processing



# Quick Demo: EO Browser

[https://apps.sentinel-hub.com/eo-browser/?zoom=13&lat=27.70549&lng=85.32068&themeld=DEFAULT-THEME&visualizationUrl=https%3A%2F%2Fservices.sentinel-hub.com%2Fogc%2Fwms%2Fbd86bcc0-f318-402b-a145-015f85b9427e&datasetId=S2L2A&fromTime=2024-02-11T00%3A00%3A00.000Z&toTime=2024-02-11T23%3A59%3A59.999Z&layerId=1\\_TRUE\\_COLOR&demSource3D=%22MAPZEN%22](https://apps.sentinel-hub.com/eo-browser/?zoom=13&lat=27.70549&lng=85.32068&themeld=DEFAULT-THEME&visualizationUrl=https%3A%2F%2Fservices.sentinel-hub.com%2Fogc%2Fwms%2Fbd86bcc0-f318-402b-a145-015f85b9427e&datasetId=S2L2A&fromTime=2024-02-11T00%3A00%3A00.000Z&toTime=2024-02-11T23%3A59%3A59.999Z&layerId=1_TRUE_COLOR&demSource3D=%22MAPZEN%22)



# Google Earth Engine

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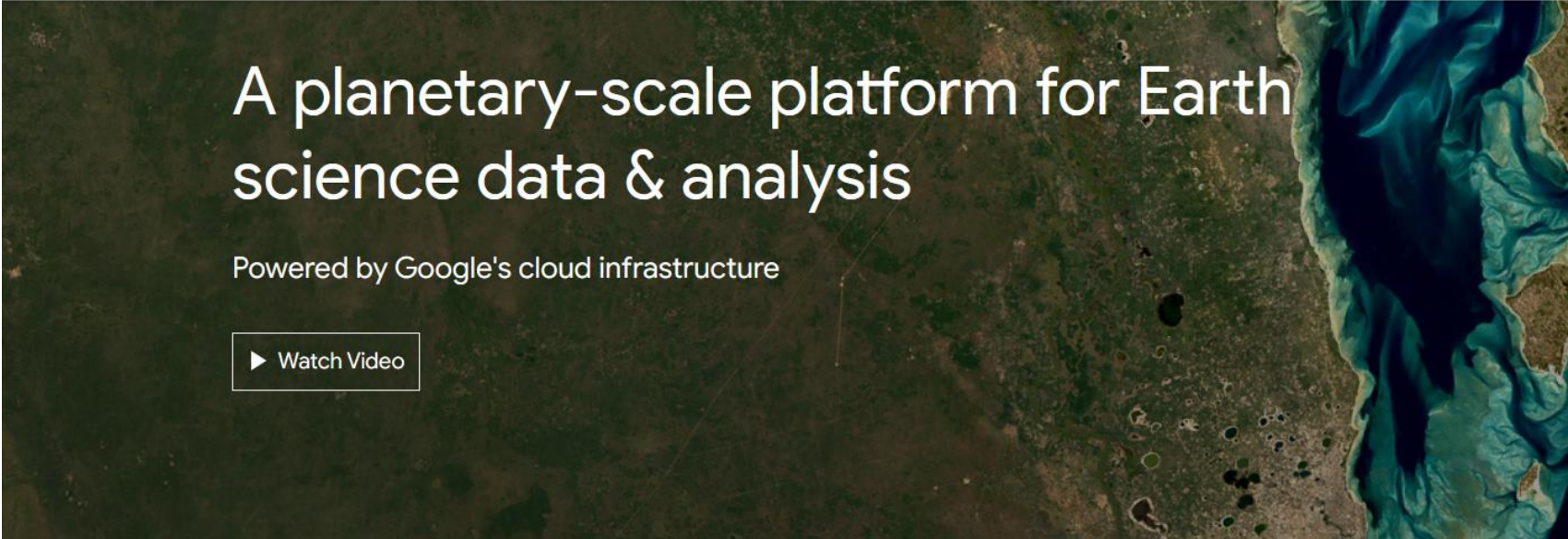
Google Earth Engine

Platform

Datasets

Noncommercial

Commercial

A satellite map background showing a river flowing through a landscape. The river is dark blue, and the surrounding land is a mix of green and brown. The text is overlaid on the left side of the map.

A planetary-scale platform for Earth  
science data & analysis

Powered by Google's cloud infrastructure

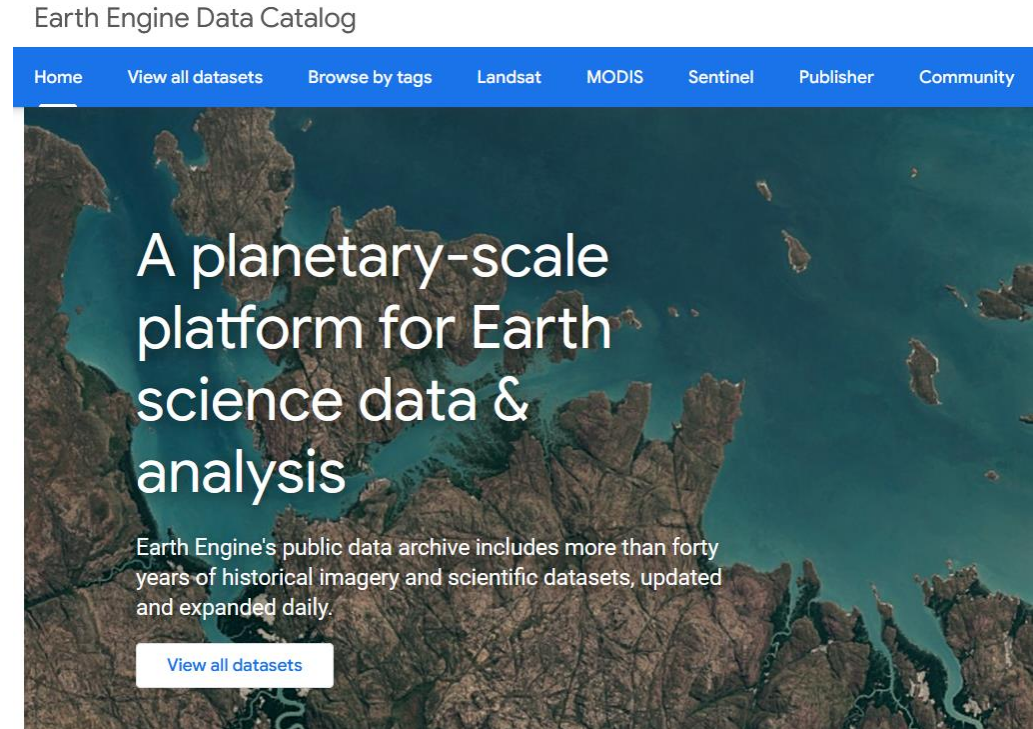
▶ Watch Video



# Google Earth Engine

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- Launched in 2010 at COP16
- Managed by Google
- Free for Non-Commercial use
- Available also for commercial customers
- Hosts a very large number of data sets
- Data is often available very rapidly





# Google Earth Engine

Earth Engine Data Catalog

Search

Home View all datasets Browse by tags Landsat MODIS Sentinel Publisher Community API Docs



Landsat 9 OLI-2/TIRS-2

2021–Present



Landsat 8 OLI/TIRS

2013–Present



Landsat 7 ETM+

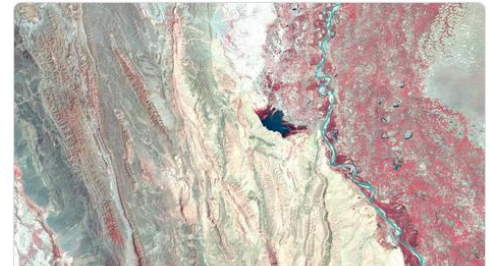
1999–2021



Landsat 5 TM



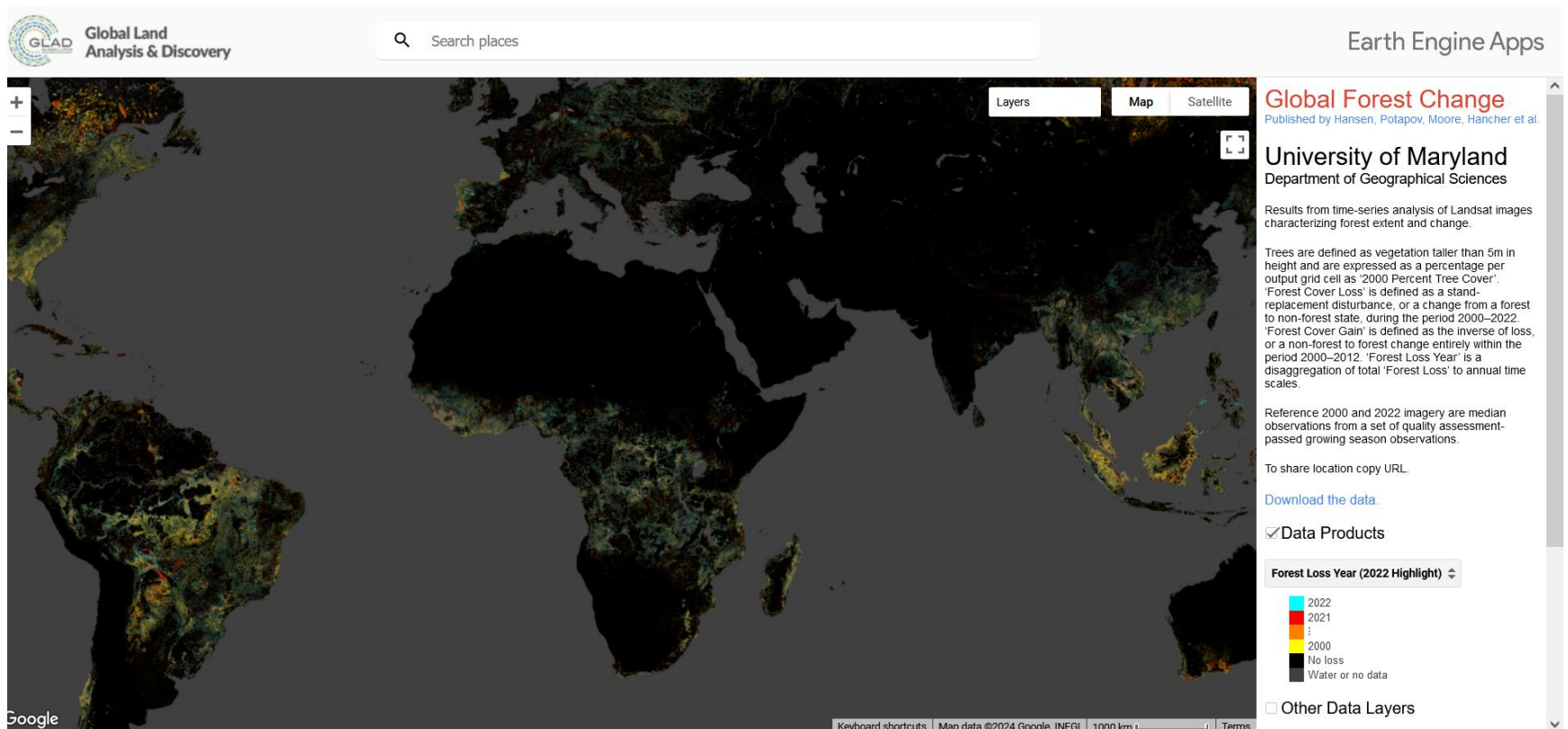
Landsat 4 TM



Landsat 1-5 MSS

# Quick Demo: Global Forest Loss

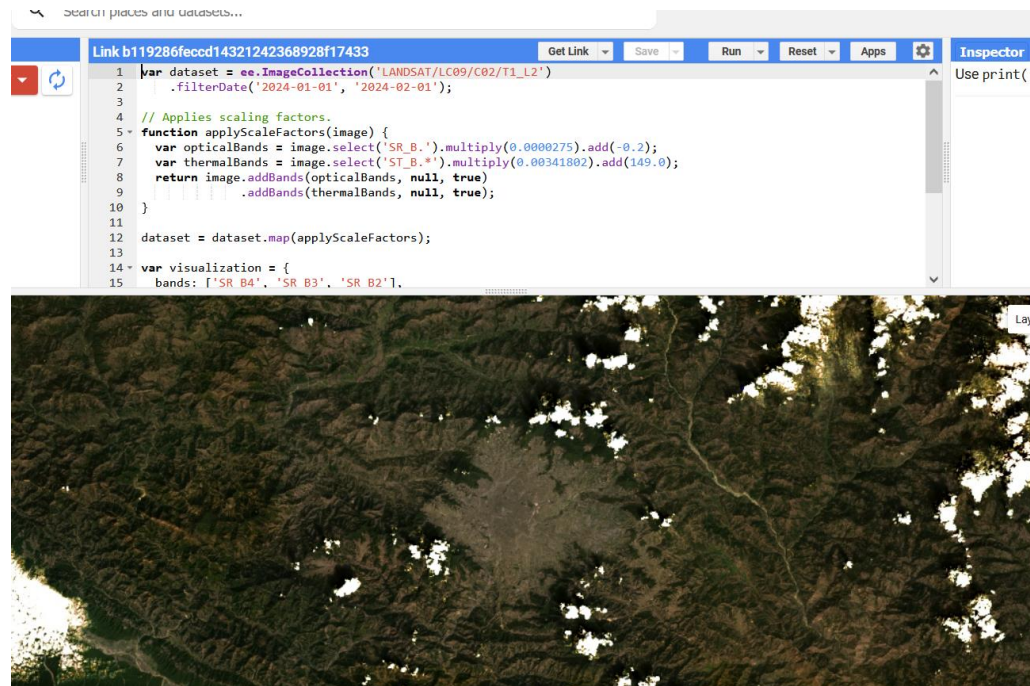
<https://glad.earthengine.app/view/global-forest-change#bl=off;old=off;dl=1;lon=20;lat=10;zoom=3;>



# Quick Demo: LANDSAT Data

[https://developers.google.com/earth-engine/datasets/catalog/LANDSAT\\_LC09\\_C02\\_T1\\_L2](https://developers.google.com/earth-engine/datasets/catalog/LANDSAT_LC09_C02_T1_L2)

<https://code.earthengine.google.com/b119286feccd14321242368928f17433>





# Quick Demo: MODIS Fires

[https://developers.google.com/earth-engine/datasets/catalog/MODIS\\_061\\_MCD64A1](https://developers.google.com/earth-engine/datasets/catalog/MODIS_061_MCD64A1)

<https://code.earthengine.google.com/7a69fff1a1eab4a17ff5c0cd78a7f770>

