Open Buildings

- I will be presenting two datasets today:
  - Open Buildings
  - Preview of a new Sentinel-2 based dataset we're releasing soon

Building Detections

Building Detections

Maps for building data are scarce in the developing world

- Often city municipalities don't have them

Buildings Detections

- We want to create maps of all the buildings in the developing world because:
  - Urban planning
  - Population estimates for areas with infrequent census
  - **Humanitarian response**

157 million people

were reached by humanitarian organizations in 2022

Source: UNOCHA

30+ years

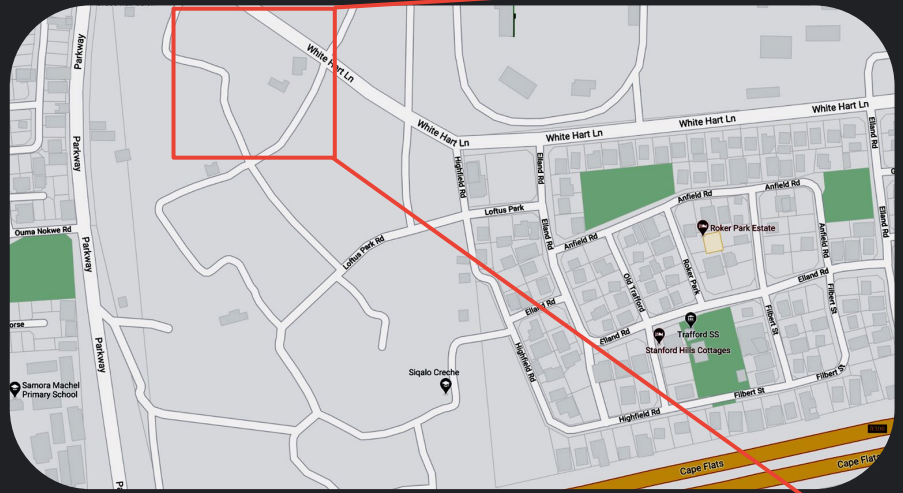
How long ago some countries did their last census

Source: UNFPA

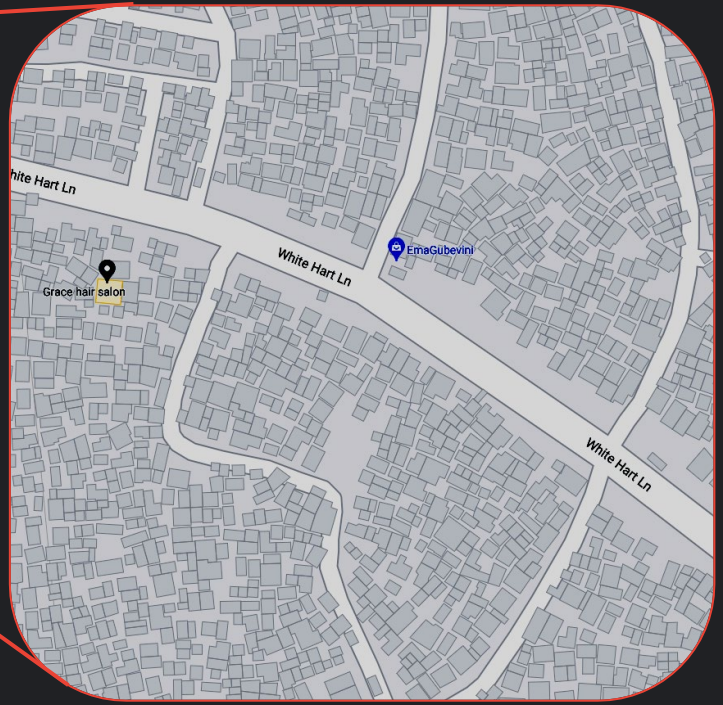
Open Buildings Dataset

Open Buildings Dataset

A dataset of AI generated building detections in the developing world obtained from satellite imagery



Before Open Buildings



After Open

Open Buildings Dataset

What's different from what's already out there?

- Our model is built for the global south

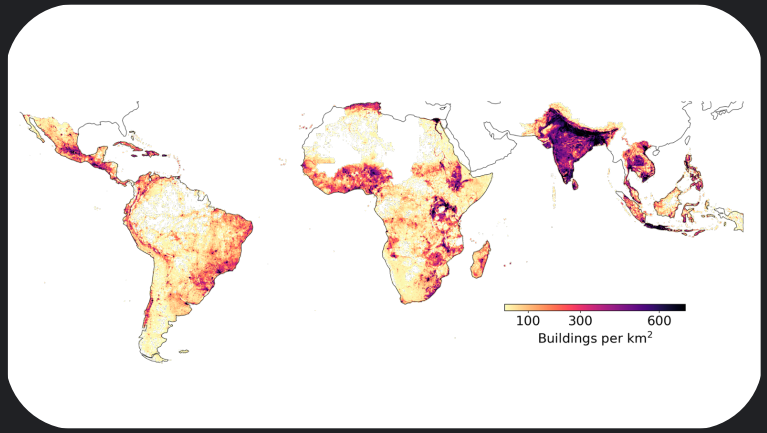
Africa is a very diverse continent, and the detection of buildings is a wide-ranging task.

How do we perform buildings detection?

Instance segmentation with U-Net / HRNet and simple post-processing.

Impact

- On Google Maps: So far our data provides **40% of all buildings in the whole world**
- Latest version (released a few months) has ~1.8B building detections
  - ***Covers 64% of the Global South***



Other Impact

Research community

- Researchers (>85 paper citations)
- African developer community outreach (e.g. AI bootcamp in Nigeria, Zindi competition)

Humanitarian Response

- AI models for post disaster damage assessment
  - 2023 Turkey/Syria Earthquake
  - 2022 Pakistan Floods
- UN and Halo Trust
  - Finding count of displaced people
  - Landmine clearance

Temporal Open Buildings

Our upcoming release

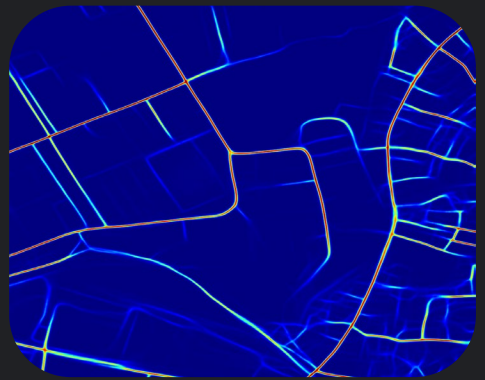
Sentinel2 imagery

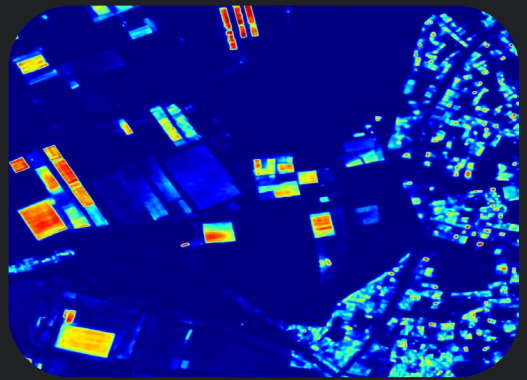
Advantages

- ~5 day revisit time
- World-wide coverage
- It's for free!

Disadvantages

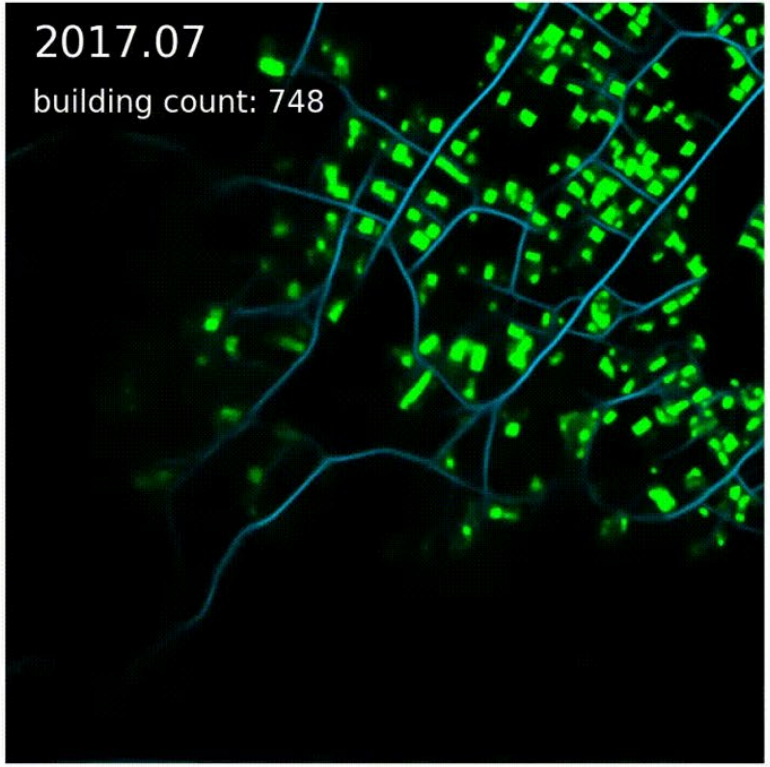
Low resolution: 10 meters per pixel

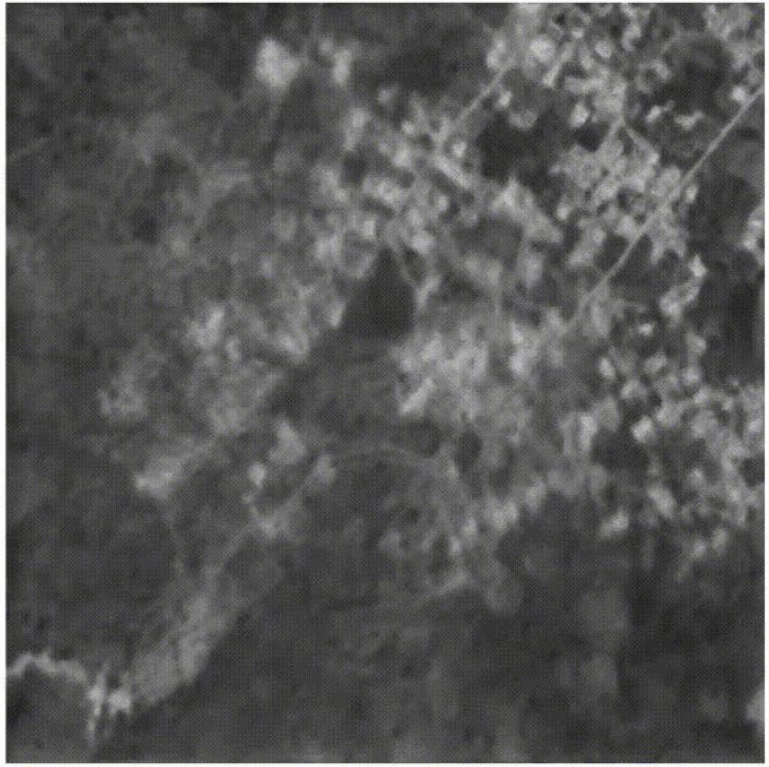




What are the possibilities?

Historical and Temporal Building/Road Detections

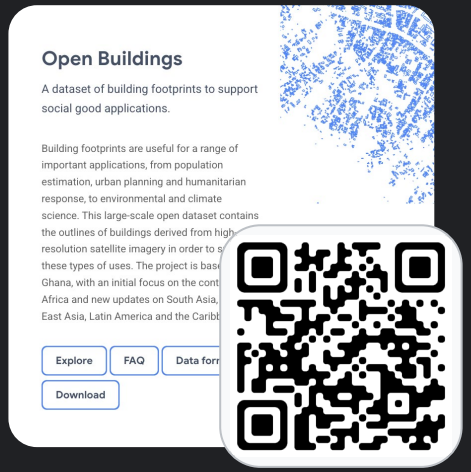




How Can I Use It?

Paper

Earth Engine Catalog



Open Buildings Site

Community Maintained Datasets

Please reach out: open-buildings-dataset@google.com