

TerraKit

Standardizing AI-Ready
Geospatial Data Preparation for
the TorchGeo Ecosystem



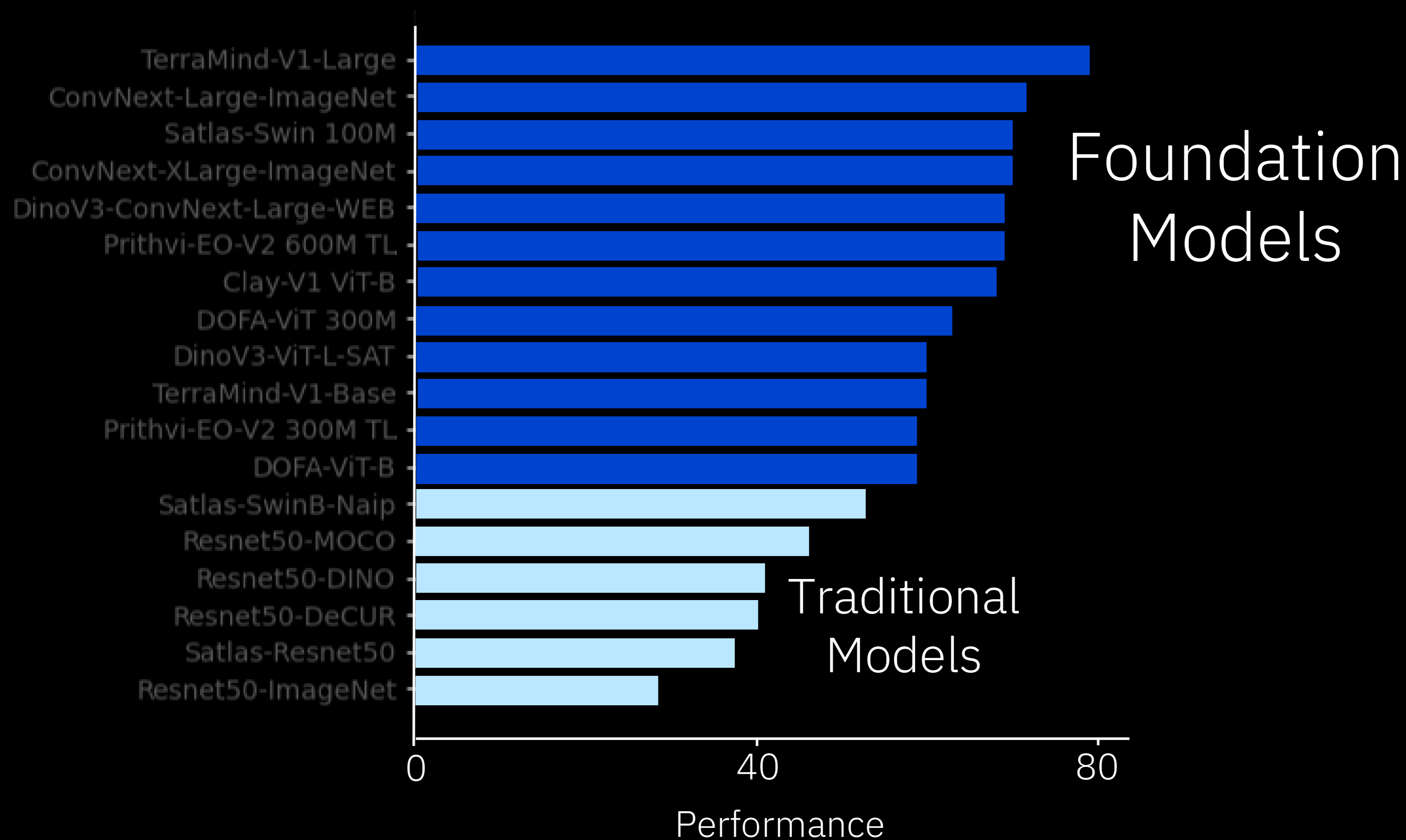
Rosie Lickorish



Romeo Kienzler

Geospatial Foundation Models

are changing
our view of
the world





Basemap

Location DD-MM-YY / DD-MM-YY

Search map

Examples ×

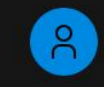
Activity-led maritim... → ⋮
 Location: Boston, USA
 Provider: Terramind_Multimodal
 Status: Unavailable

Activity-led maritim... → ⋮
 Location: Houston, USA
 Provider: Terramind_Multimodal
 Status: Unavailable

Crop Mapping → ⋮
 Location: Madhya Pradesh, In...
 Provider: Terramind_Multimodal
 Status: Unavailable

Crop Mapping → ⋮
 Location: Western Cape, Sout...
 Provider: Terramind_Multimodal
 Status: Unavailable





Crop Mapping

📍 Madhya Pradesh, India 🗺️ Unavailable / Unavailable

🔍 Search map



Run Inference



Layers ✕

- 🕒 Input
- 📄 [G] LULC
- 📄 [G] NDVI
- 📄 [G] S1GRD-VH
- 📄 [G] S1GRD-VV
- 📄 [G] DEM
- 📄 [P] Crop Class
- 🗺️ Base map

Add data/layer +

📍
⊕
⊖




▶ 10:00:00 UTC Nov 1 2024 04:00:00 UTC Nov 1 2024 08:00:00 UTC Nov 1 2024 12:00:00 UTC Nov 1 2024 16:00:00 UTC Nov 1 2024 20:00:00 UTC Nov 2 2024 (

351.43 km

Crop Mapping

📍 Madhya Pradesh, India 🗺️ Unavailable / Unavailable

🔍 Search map



Run Inference


Layers ✕

- 🕒
📷
👁️
🔍
Input
- 📉
📷
👁️
🔍
[G] LULC
- 📉
📷
👁️
🔍
[G] NDVI
- 📉
📷
👁️
🔍
[G] S1GRD-VH
- 📉
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👁️
🔍
[G] S1GRD-VV
- 📉
📷
👁️
🔍
[G] DEM
- 📉
📷
👁️
🔍
[P] Crop Class
- 🗺️
👁️
Base map

Add data/layer
+



📍
+
-

▶
10:00:00 UTC
Nov 1 2024 04:00:00 UTC
Nov 1 2024 08:00:00 UTC
Nov 1 2024 12:00:00 UTC
Nov 1 2024 16:00:00 UTC
Nov 1 2024 20:00:00 UTC
Nov 2 2024 (

57.91 km



Crop Mapping

📍 Madhya Pradesh, India 🗺️ Unavailable / Unavailable

🔍 Search map



Run Inference



Layers ✕

- 📄 Input 🗄️ 👁️ 🗖️
- 📄 [G] LULC 🗄️ 🗖️
- 📄 [G] NDVI 🗄️ 🗖️
- 📄 [G] S1GRD-VH 🗄️ 🗖️
- 📄 [G] S1GRD-VV 🗄️ 🗖️
- 📄 [G] DEM 🗄️ 🗖️
- 📄 [P] Crop Class 🗄️ 👁️ 🗖️
- 🗺️ Base map 👁️

Add data/layer +

📄

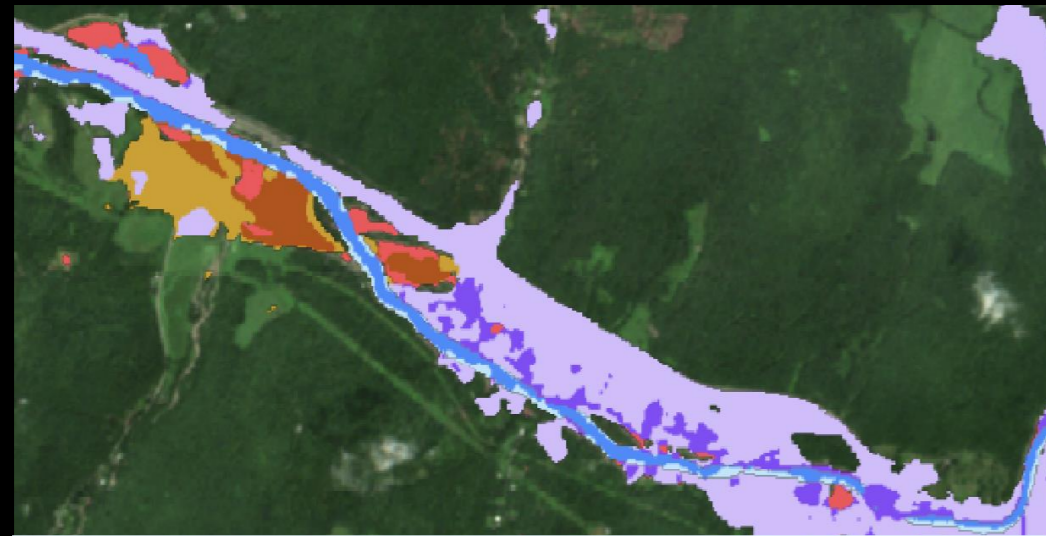
📍

+

⊖

▶ 10:00:00 UTC Nov 1 2024 04:00:00 UTC Nov 1 2024 08:00:00 UTC Nov 1 2024 12:00:00 UTC Nov 1 2024 16:00:00 UTC Nov 1 2024 20:00:00 UTC Nov 2 2024 (

0.62 km



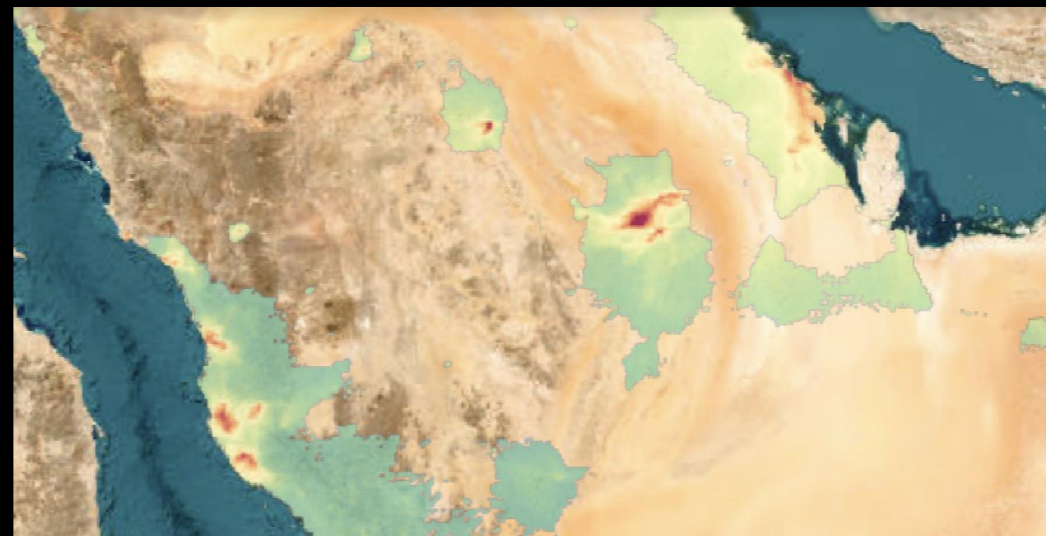
Floods



Burn scars



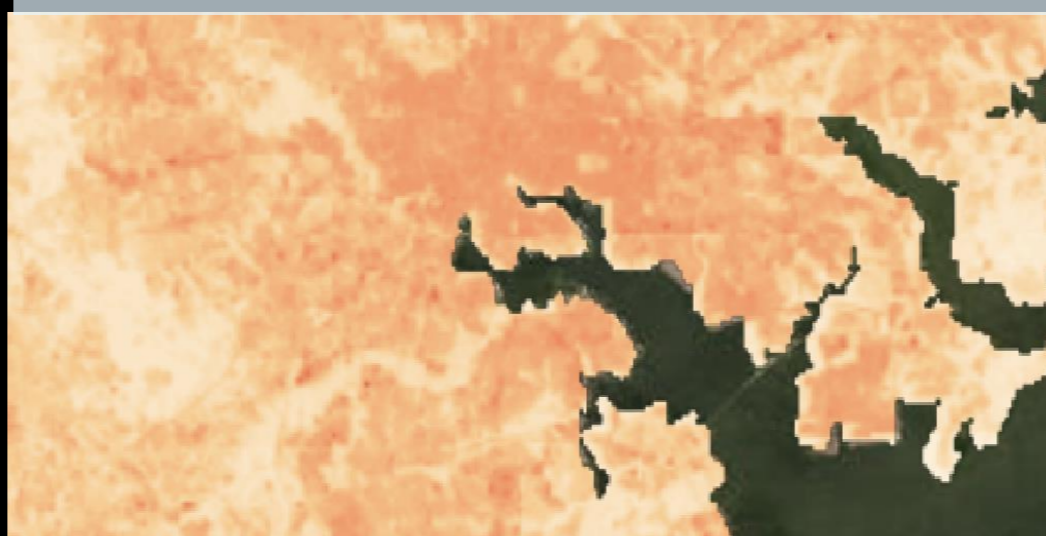
Landslides



GHG emissions



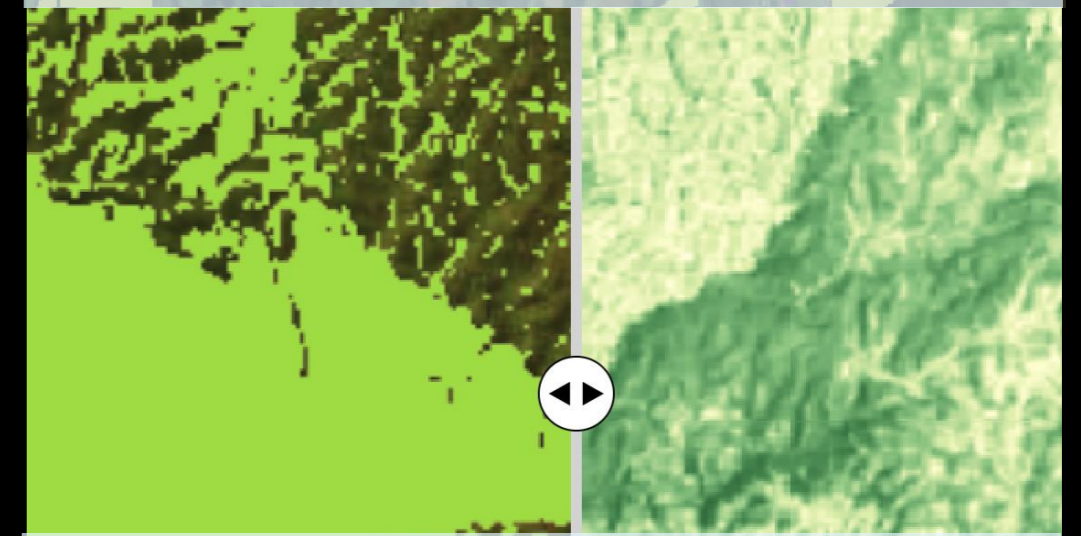
Building damage



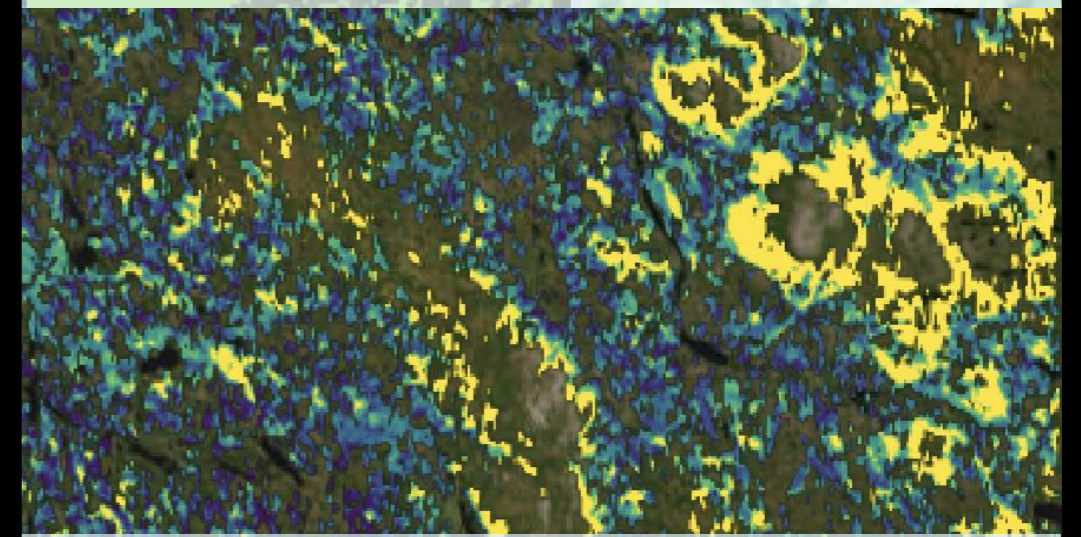
Urban heat islands



Crop type



Biomass



Biodiversity

The data headache...



Introducing...



TerraKit

Open-source python library for
geospatial dataset curation

```
import terrakit  
terrakit.process_labels("./my_labels")  
terrakit.download_data()  
terrakit.chip_and_label_data()  
terrakit.taco_store_data()
```

```
terrakit.taco_store_data()  
terrakit.chip_and_label_data()  
terrakit.download_data()
```

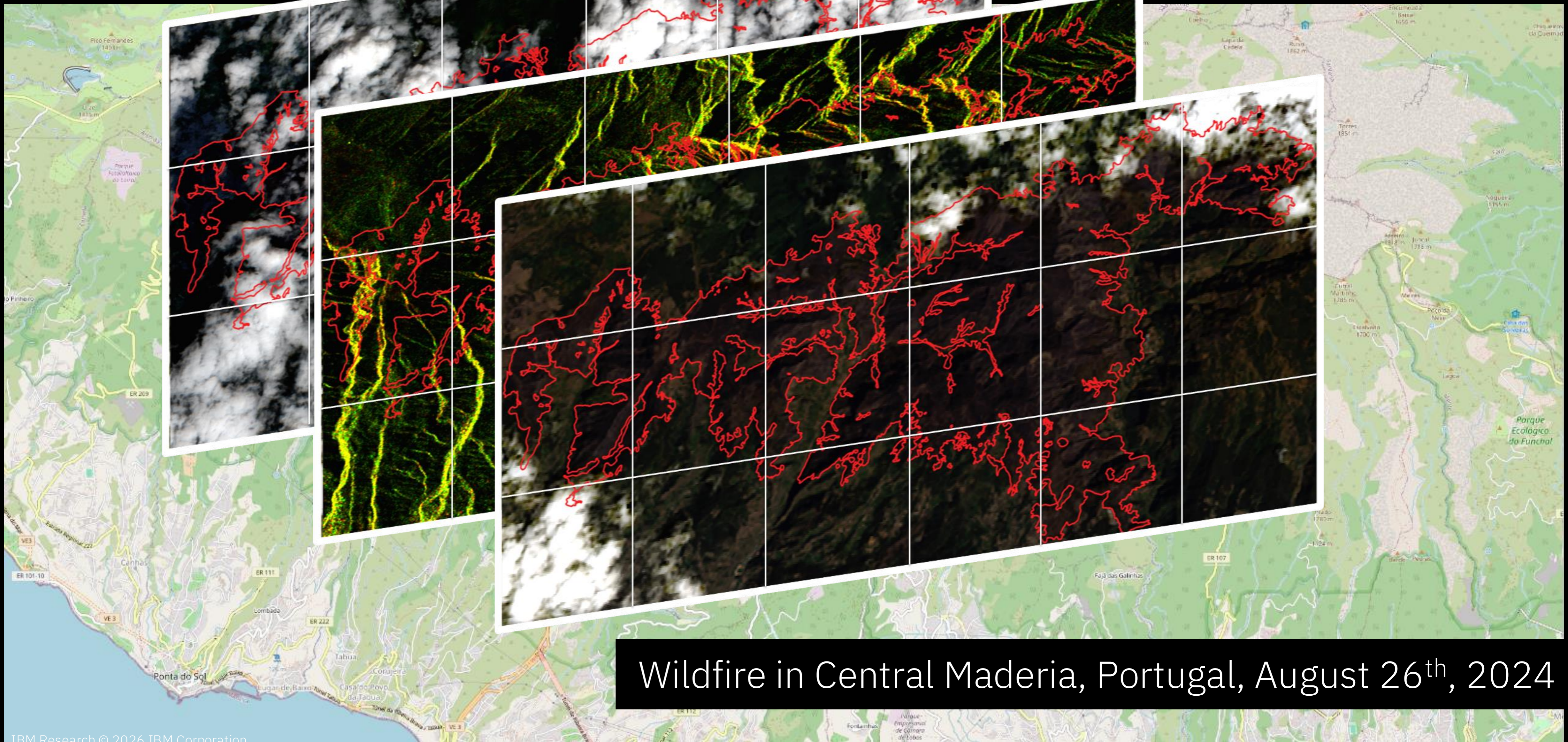


NASA

EARTHDATA

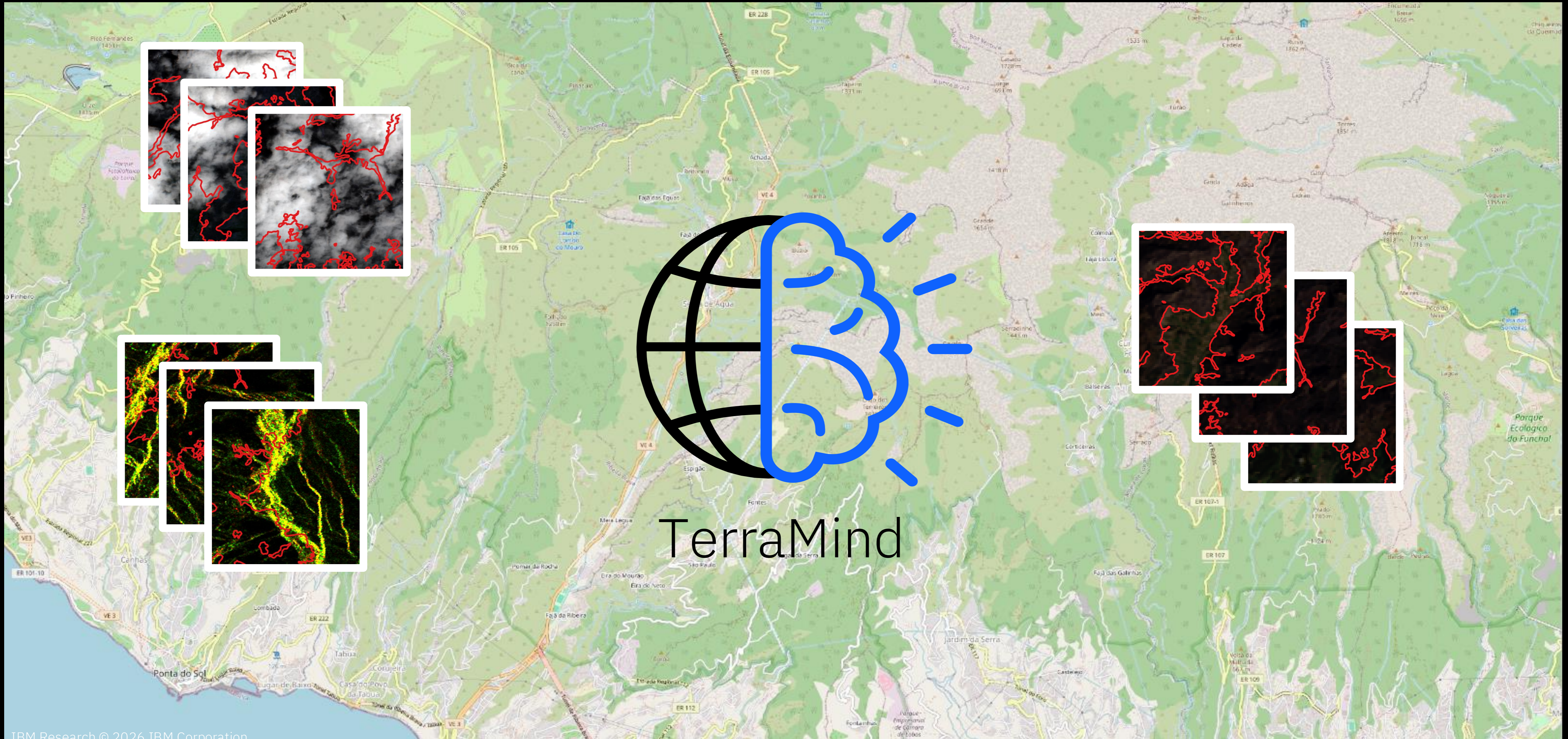


Let's curate a dataset with Terra



Wildfire in Central Maderia, Portugal, August 26th, 2024

Fine-Tune TerraMind with AI-Ready Data





TerraKit

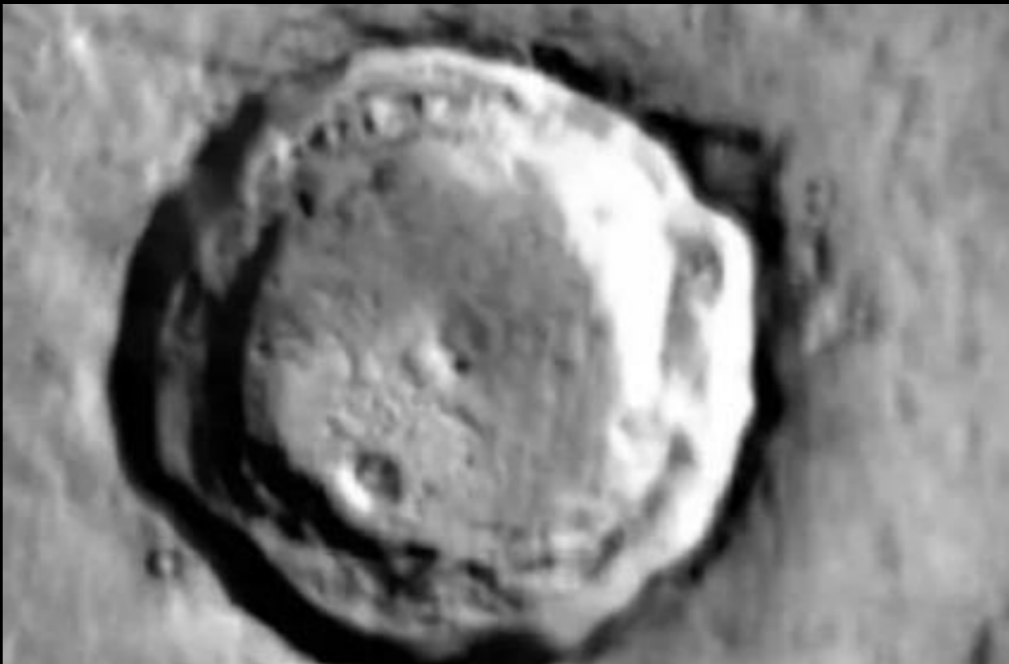
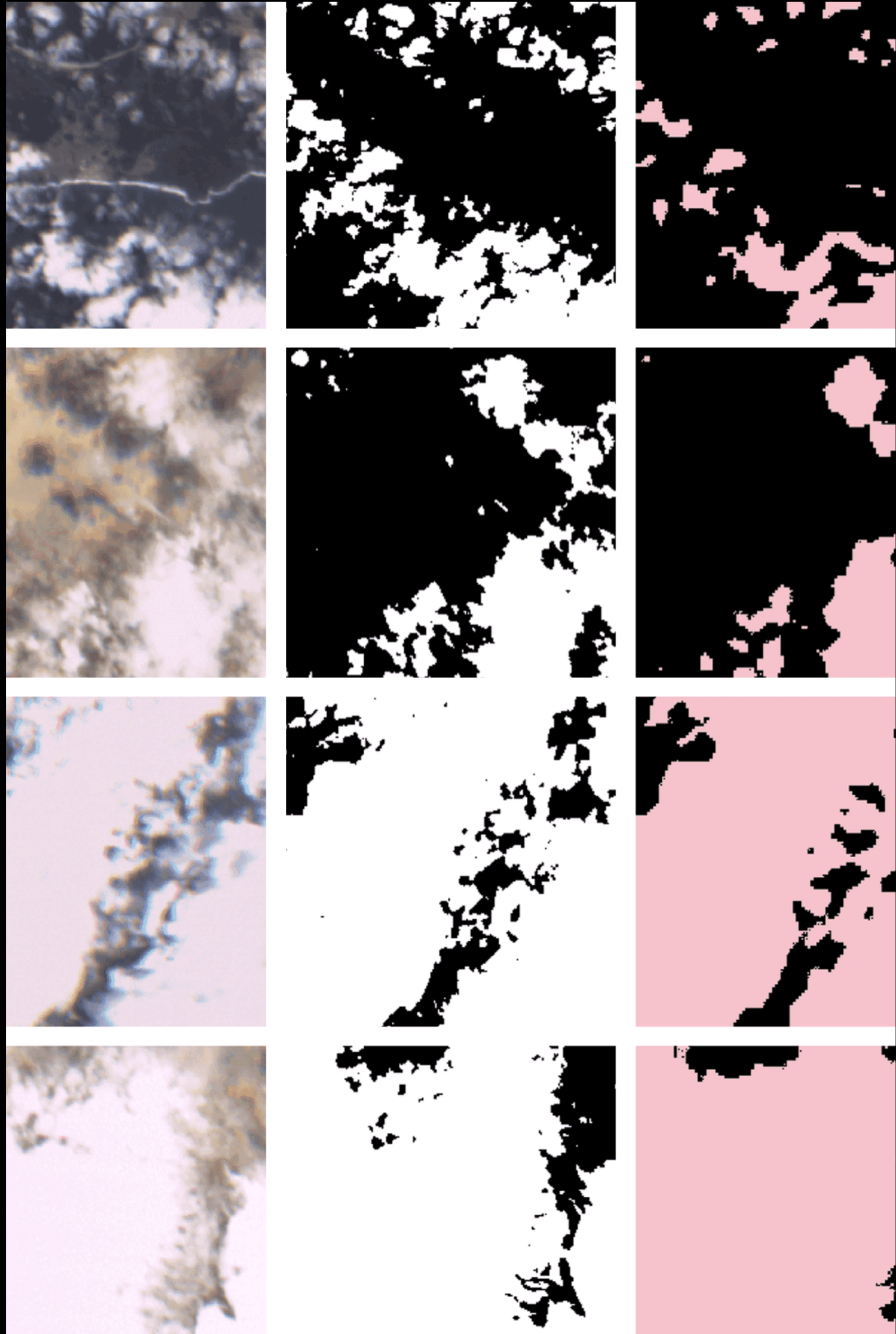


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TerraTorch





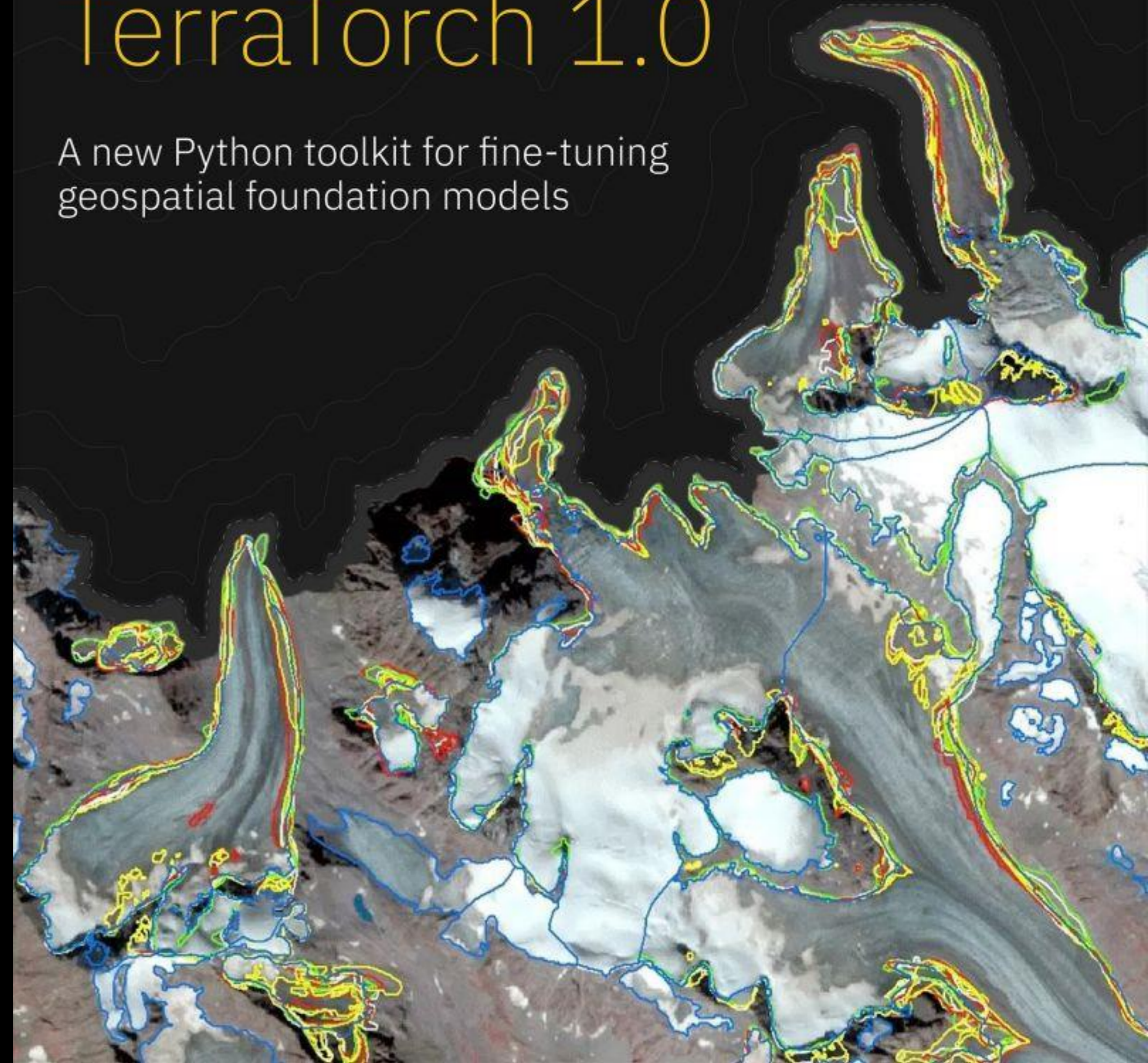
TerraTorch unlocks the foundation model potential



IBM Research

IBM introduces TerraTorch 1.0

A new Python toolkit for fine-tuning
geospatial foundation models

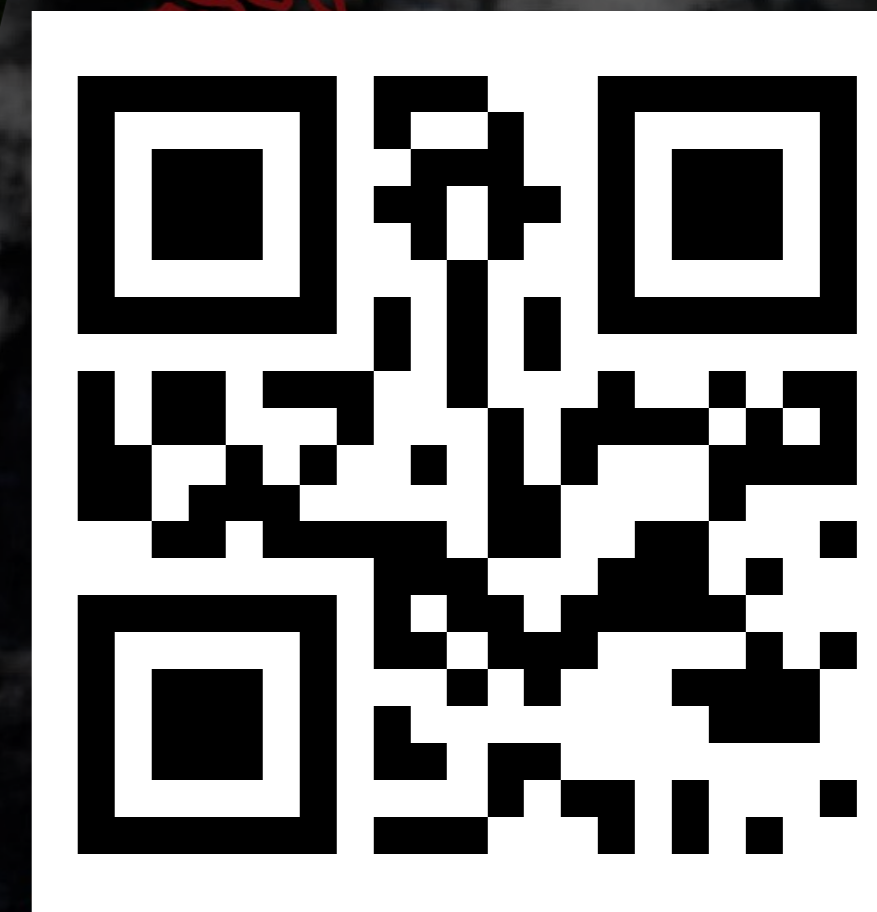




Terrakit



TerraTorch



Thank you for listening