GeoAI – map sewerage infrastructure

GWF
GEOSPATIAL WORLD FORUM
CONFERENCE & TECH SHOW

April, 29th 2026

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Novel-t

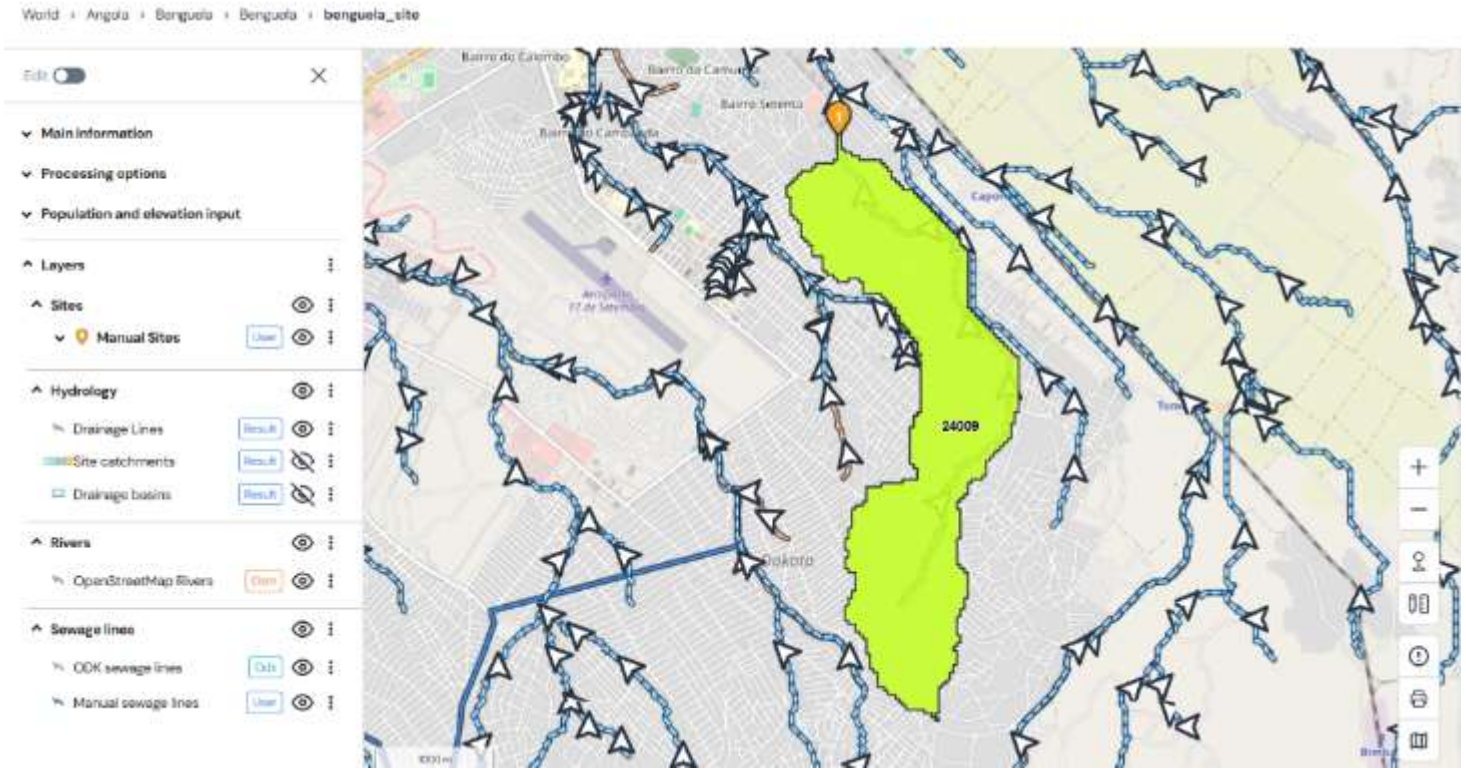
Your Swiss IT partner

Agenda

- Context
- Using AI to identify sewerage related features
- Using AI to generate a population model
- Reconstitute a network and infer network directions
- Q&A

Support Environmental Surveillance

- Compute the theoretical catchment area for each sampling site
- Leverage GIS-based population models to estimate catchment populations
- Help to identify where to act following a positive sample (e.g. vaccination campaigns, COVID-19 curfews, etc)



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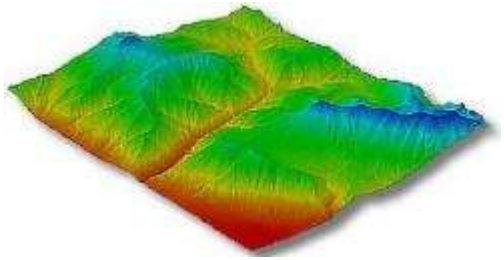
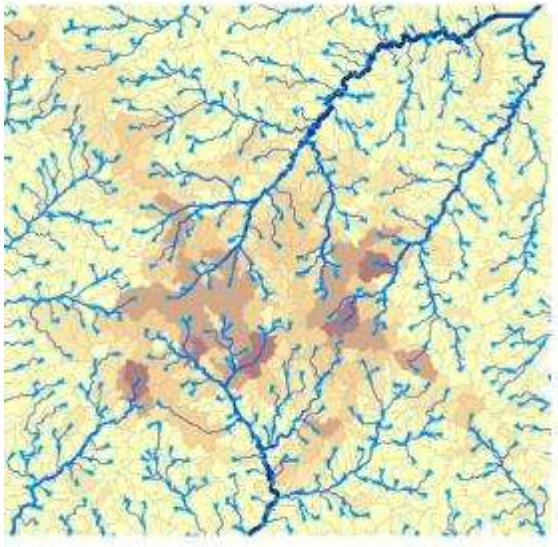


DEM: Digital elevation Model

Catchments



Population

What do we need to detect?







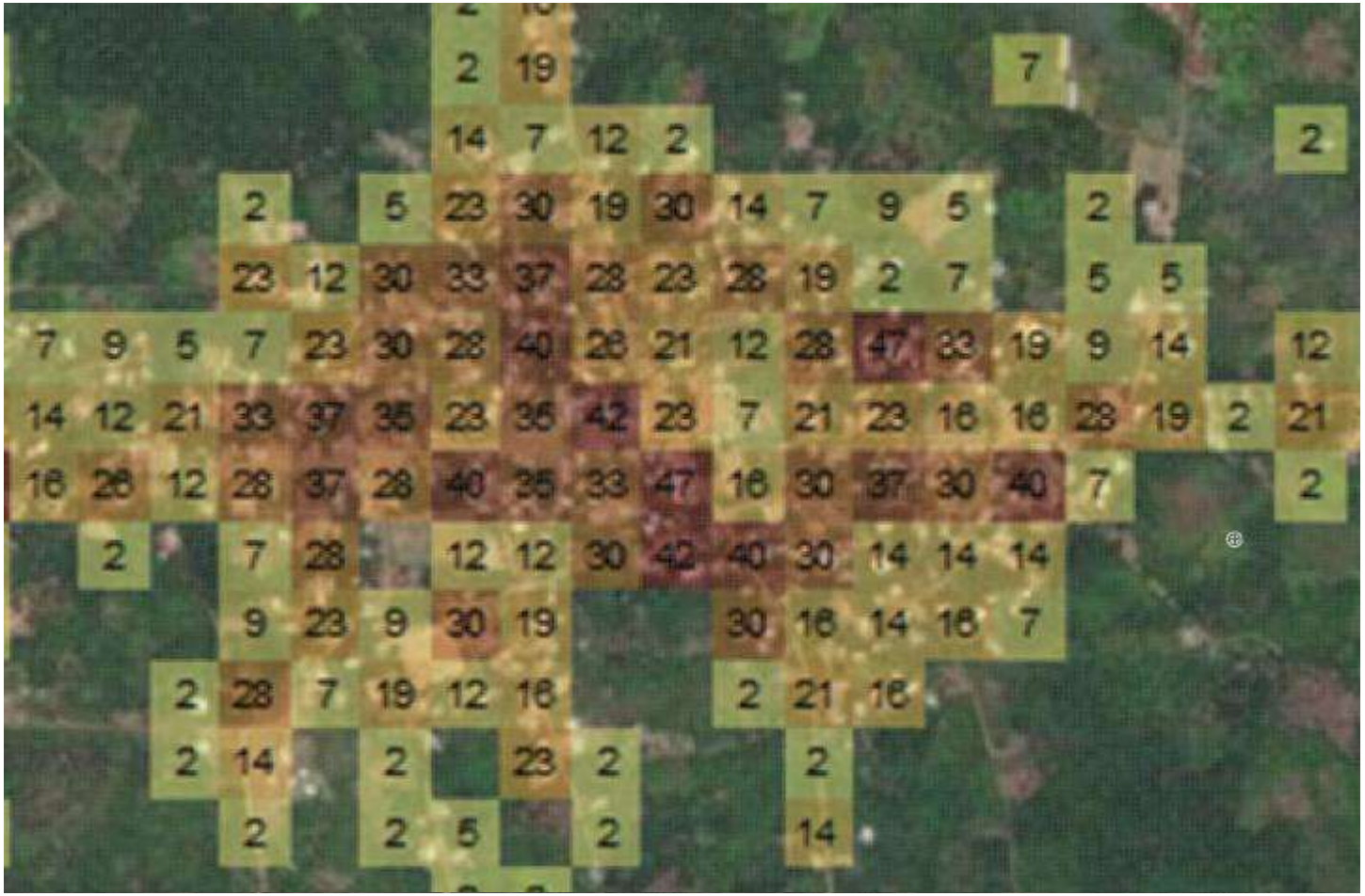

Detecting features

Tech Stack

NetworkX
Network Analysis in Python
PyTorch
Keras
Whitebox Geospatial
QGIS
python
ultralytics
YOLO
pygeoapi
momepy
Urban Morphology Measuring Toolkit

Streetview *and* *Aerial imagery*

Extract building to generate population model



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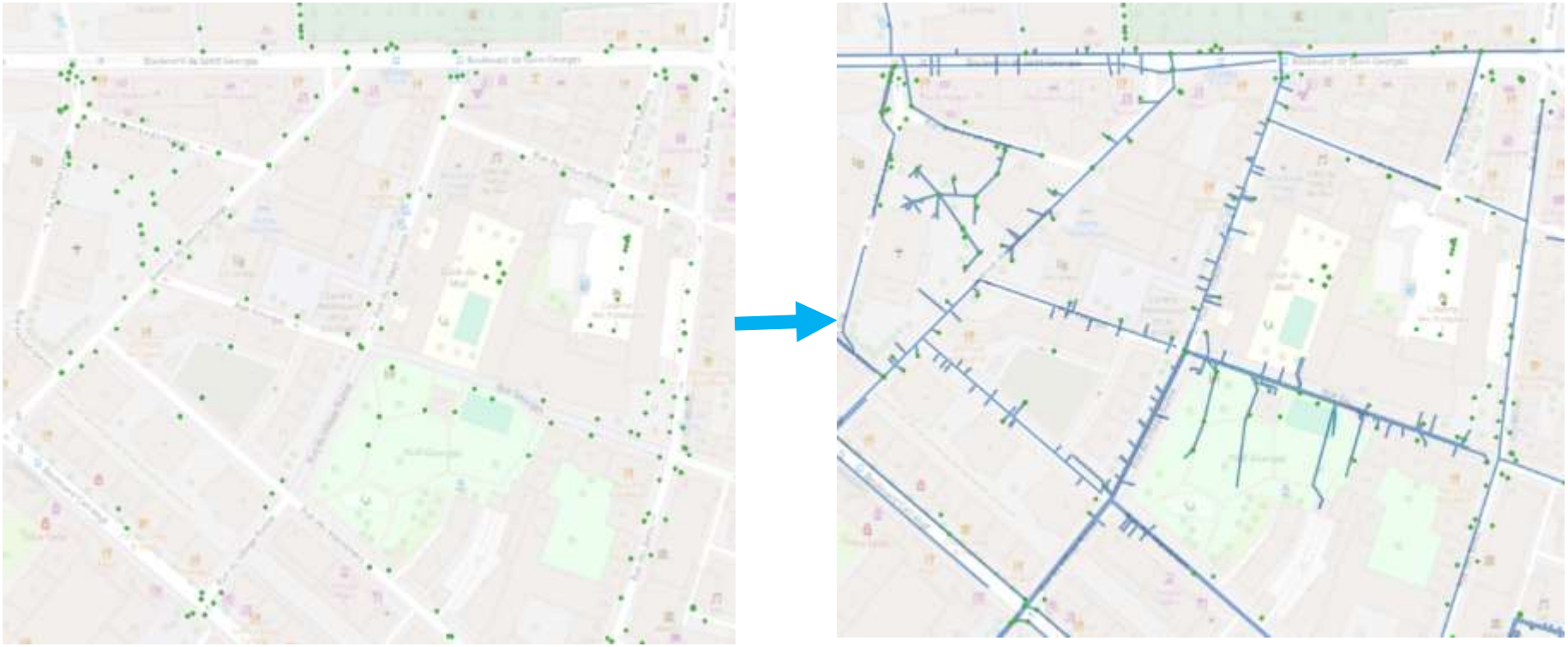
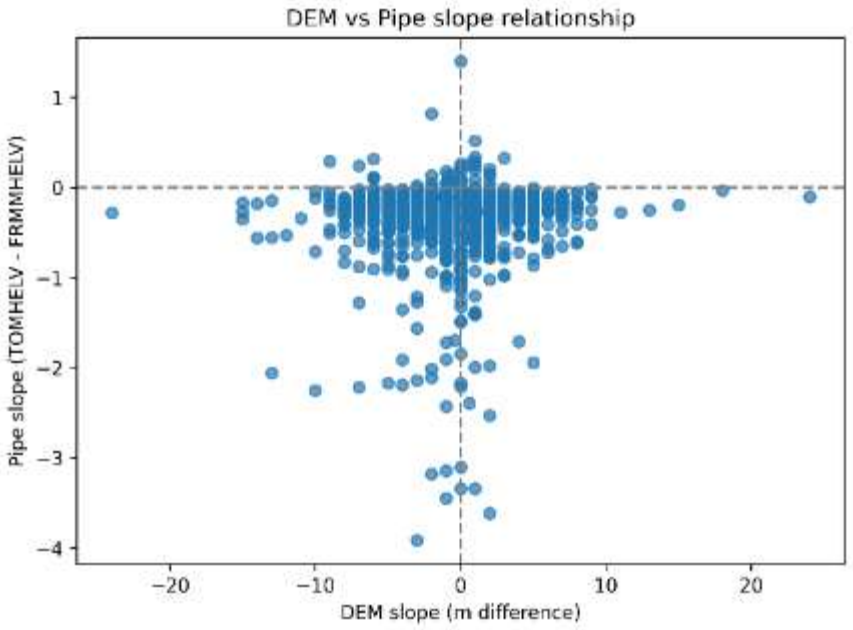
Connect points to reconstitute a network

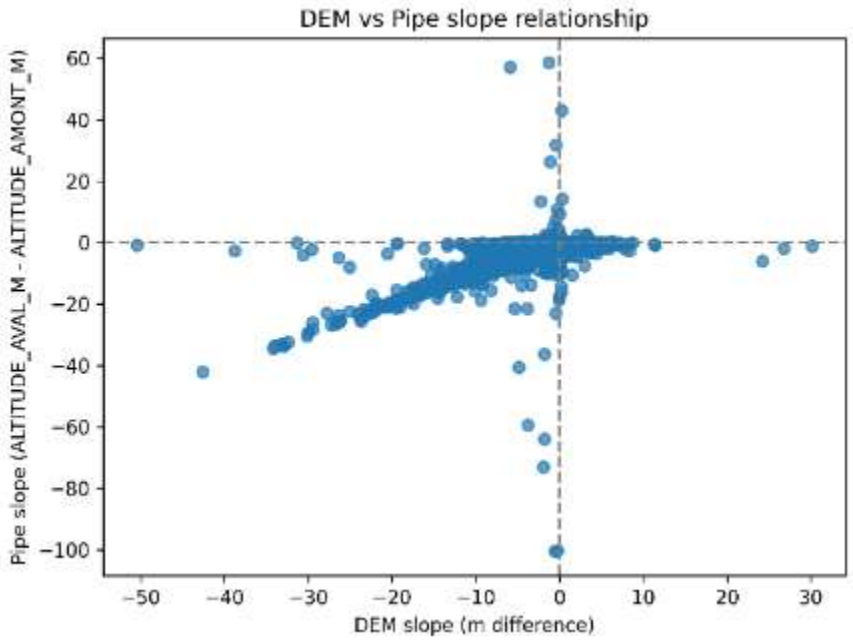
- Use roads datasets



Graph direction using DEM

- Expected: Linear relationship





Dhaka vs Geneva

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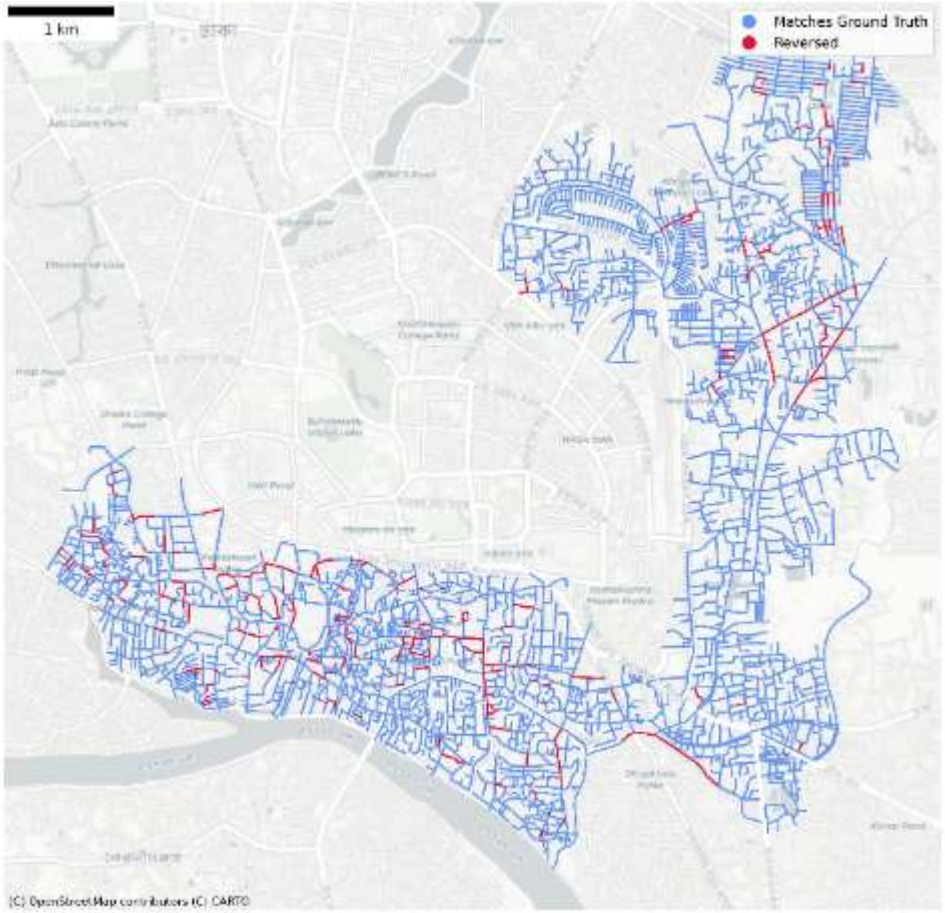
Graph direction: Use attractor points



Area	Count	Attractor points
Dakshinkhan	99.4%	6
Dhaka South	92.1%	22

Legend:

- Matches Ground Truth
- Reversed

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Thank You

For Your Attention

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