

Mapping and Monitoring Artisanal Mining from Space (3MSpace)



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Problem Statement

- ✓ Tremendous environmental degradation from artisanal mining in Ghana
- ✓ Ground-based interventions by Government mostly unsuccessful
- ✓ Persistent cloud cover limits the use of images from optical sensors

Scientific Background

- ✓ Use of open access Synthetic Aperture Radar (SAR) data largely unexplored
- ✓ Land cover changes from SAR time-series enable identification of mining
- ✓ Research on methods to detect and monitor artisanal mining at infancy

Objectives

- ✓ Determine suitable change detection methods for identifying artisanal mining
- ✓ Develop an automated, cloud-based artisanal mining detection algorithm



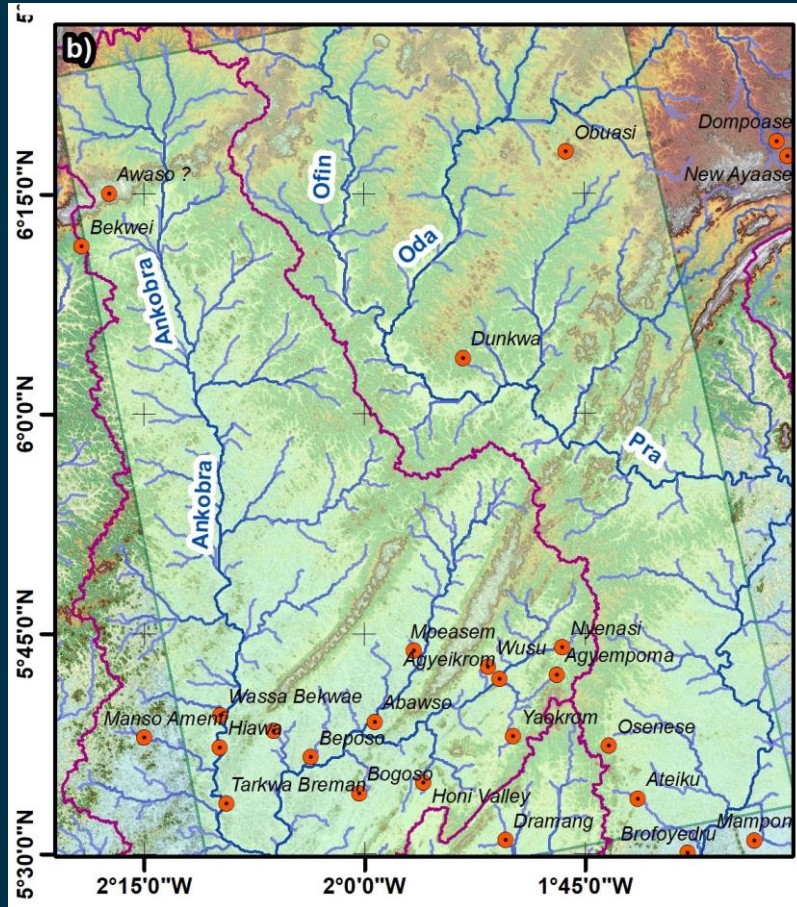
Forest degradation



Water pollution

Study Area

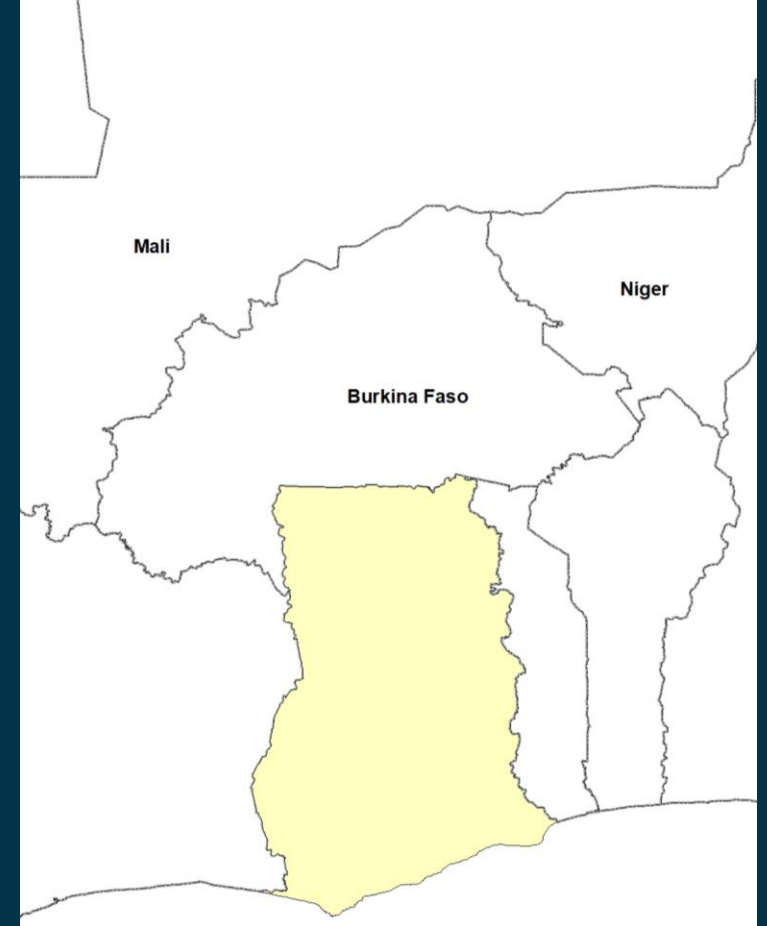
Previous, local scale



Current, national scale



Future, multi-national scale



Data

Multi-annual
Sentinel-1
time-series

VHR +
ground survey

Analysis

Metrics
Computation &
Testing Change
Detection Methods

Accuracy
Assessment &
Selection of Best
Method

Cloud-based
Implementation
(automated)

Others

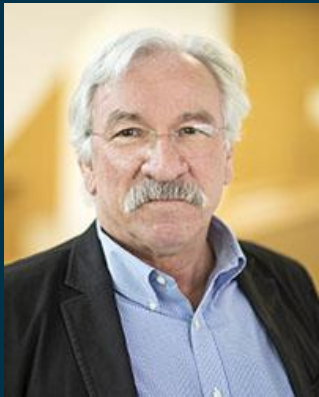
Scientific Meetings; Publications; Capacity Building



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