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Utilizing UAV, LiDAR, and Subsurface Geophysical Mapping Techniques for Comprehensive Landslide Detection and Monitoring in Sri Lanka: Case Study – Bathgoda Landslide.

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Introduction

- Sri Lanka, particularly in the tropical and mountainous regions of the upper country of the island, landslides are common due to heavy rainfall, and unsustainable practices maintained in human settlements.
- The impacts of landslides are highly dependent on their spatial distribution, frequency, and the volume of material displaced (McKean and Roering, 2004).
- Traditional approaches, such as field inspections, aerial photo interpretation, and contour map analysis (Booth et al., 2009), are often limited in accuracy and reliability. Conventional contour maps often lack the resolution necessary to detect small landslides, particularly in vegetated regions where traditional remote-sensing techniques struggle to penetrate the land cover (Van Den Eeckhaut et al., 2005; Booth et al., 2009; James et al., 2012).

Research Problem

effectiveness of integrating high-density airborne LiDAR with geophysical methods for precise landslide mapping and analysis in Sri Lanka's Bathgoda area.

Objective

Primary:

To evaluate the effectiveness of integrating high-density airborne LiDAR with geophysical methods for precise landslide mapping and analysis in the Bathgoda area, Sri Lanka.

Secondary:

- To explore the synergy between airborne LiDAR and geophysical data in enhancing landslide characterization and hazard assessment.
- To develop a framework for visualizing integrated landslide data in GIS and CAD environments for effective analysis and presentation.

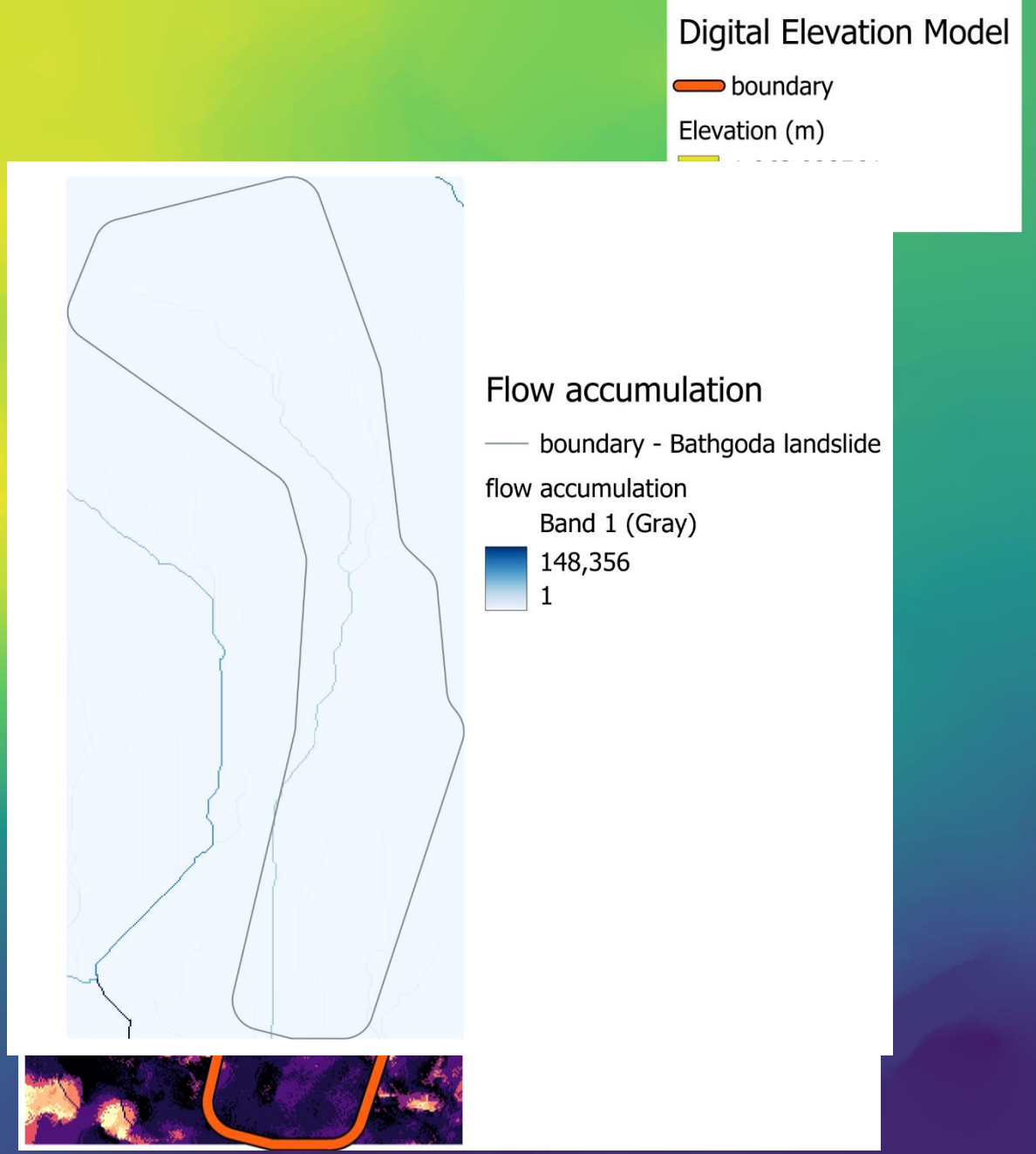
Methodology

- Study Area

Courtesy: Google Earth

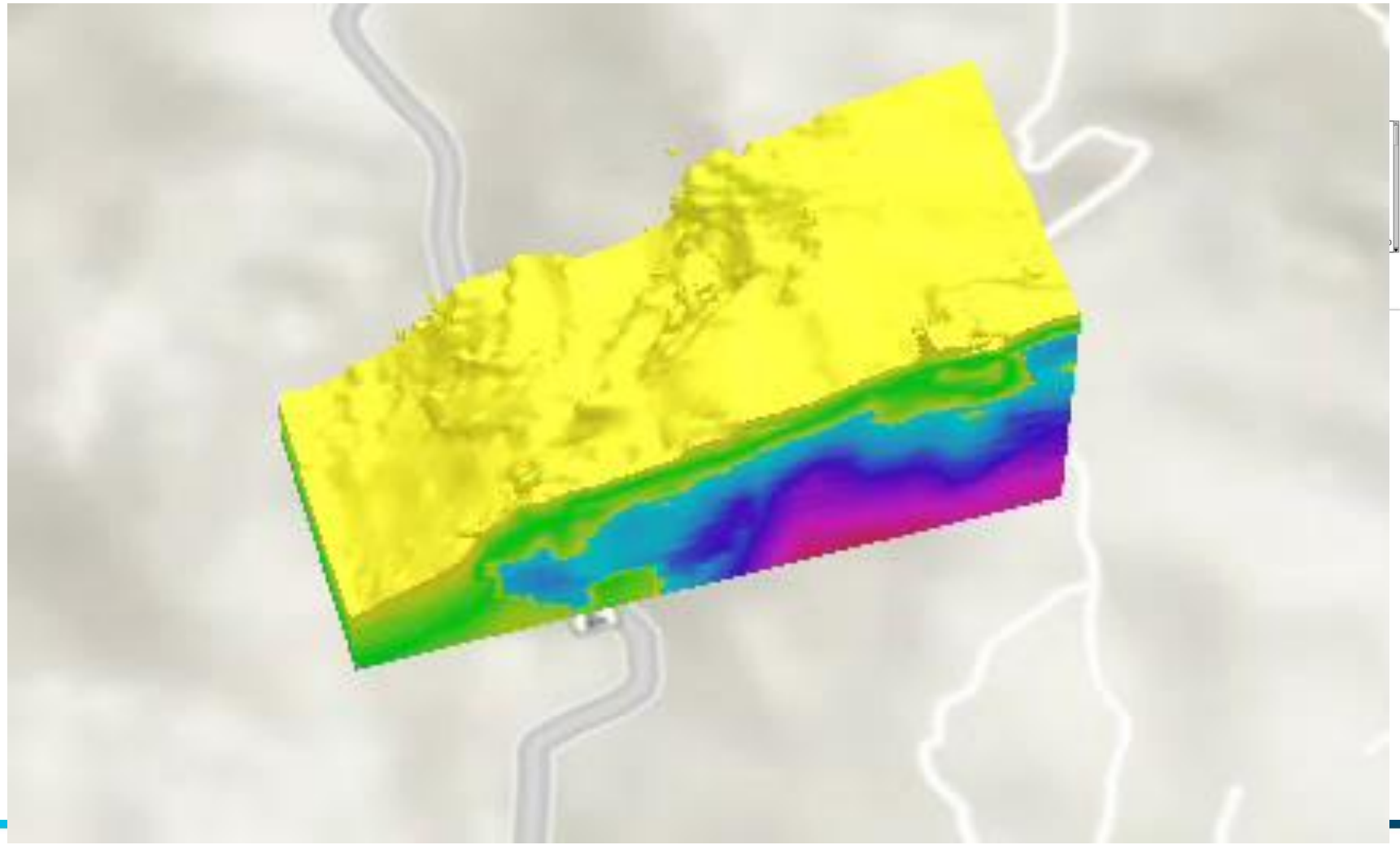
Analysis

- GEOSPATIAL OUTPUTS



Analysis Cont….

- GEOPHYSICAL OUTPUTS



Discussion & Conclusion

- Soil Samples need to be taken and verified with the available details
- Cross Sections has to be distributed on the entire area for high accurate Interpolation techniques.

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