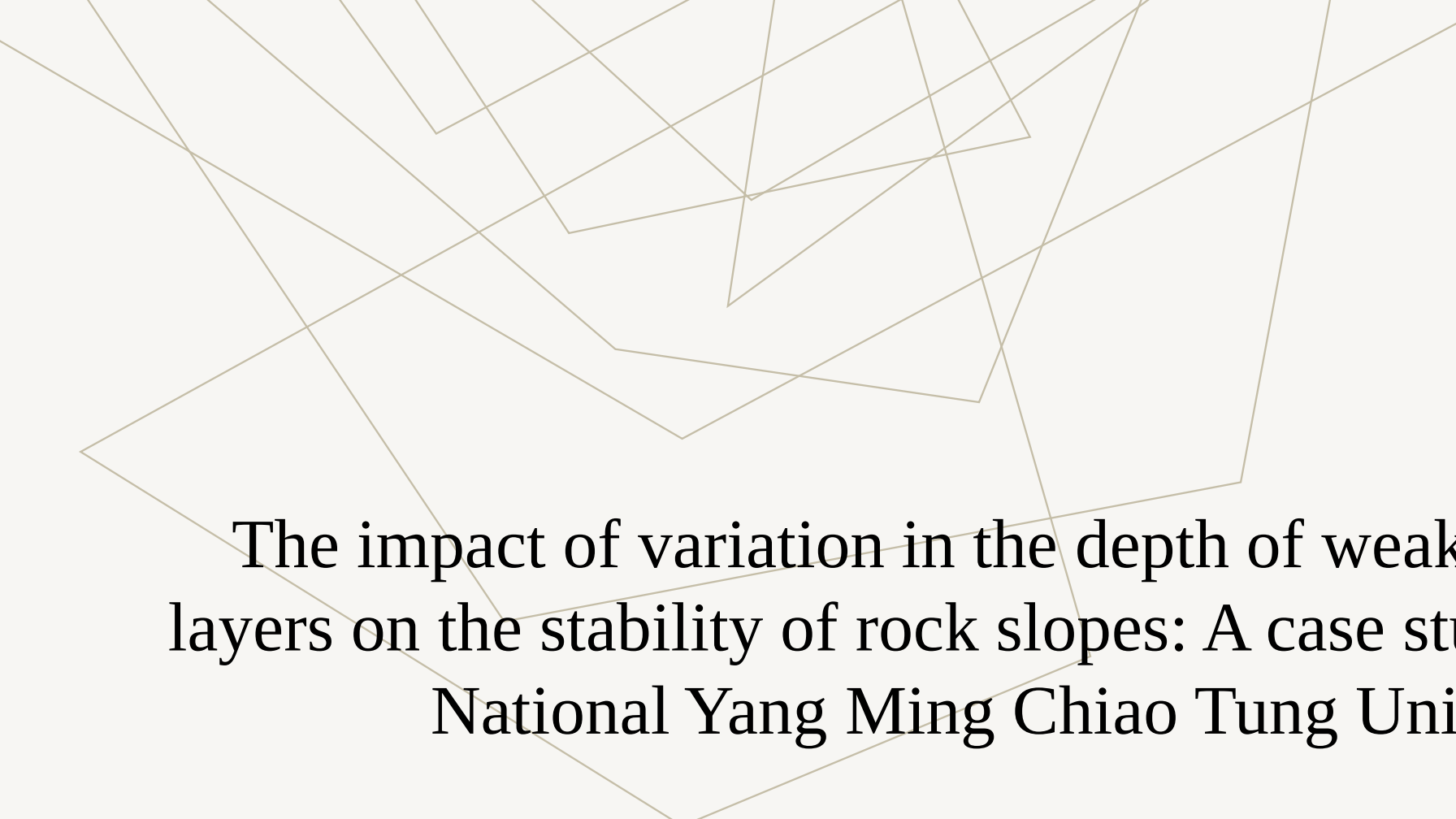


The top left corner of the slide features a series of thin, light-brown lines that intersect to form various geometric shapes, including triangles and polygons, creating a modern, abstract design.

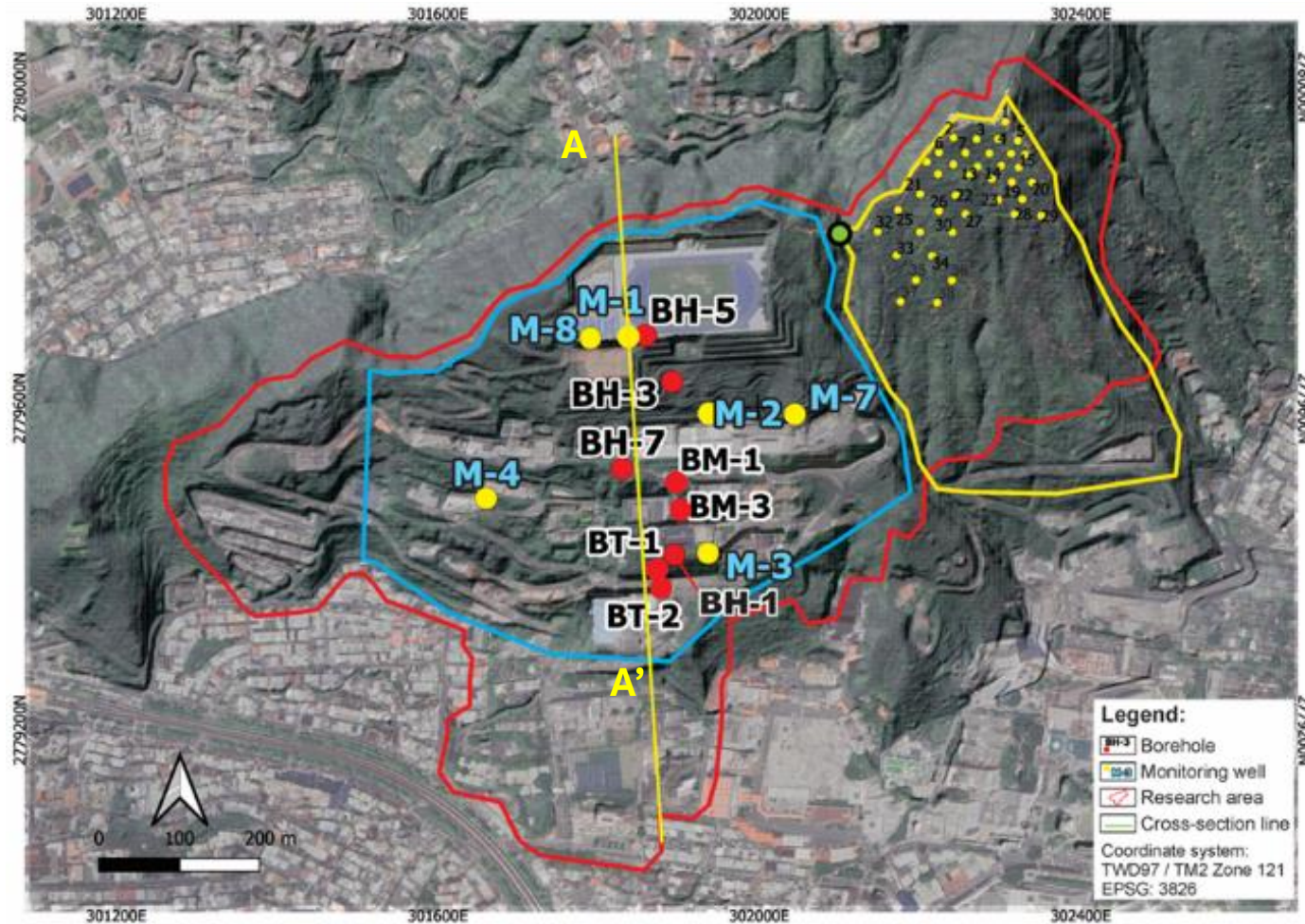
The impact of variation in the depth of weak plane in rock layers on the stability of rock slopes: A case study of the site at National Yang Ming Chiao Tung University

Presenter: Jia-Yi Wu
Advisor: Prof. Jia-Jyun Dong
Date: 10/25

Outline

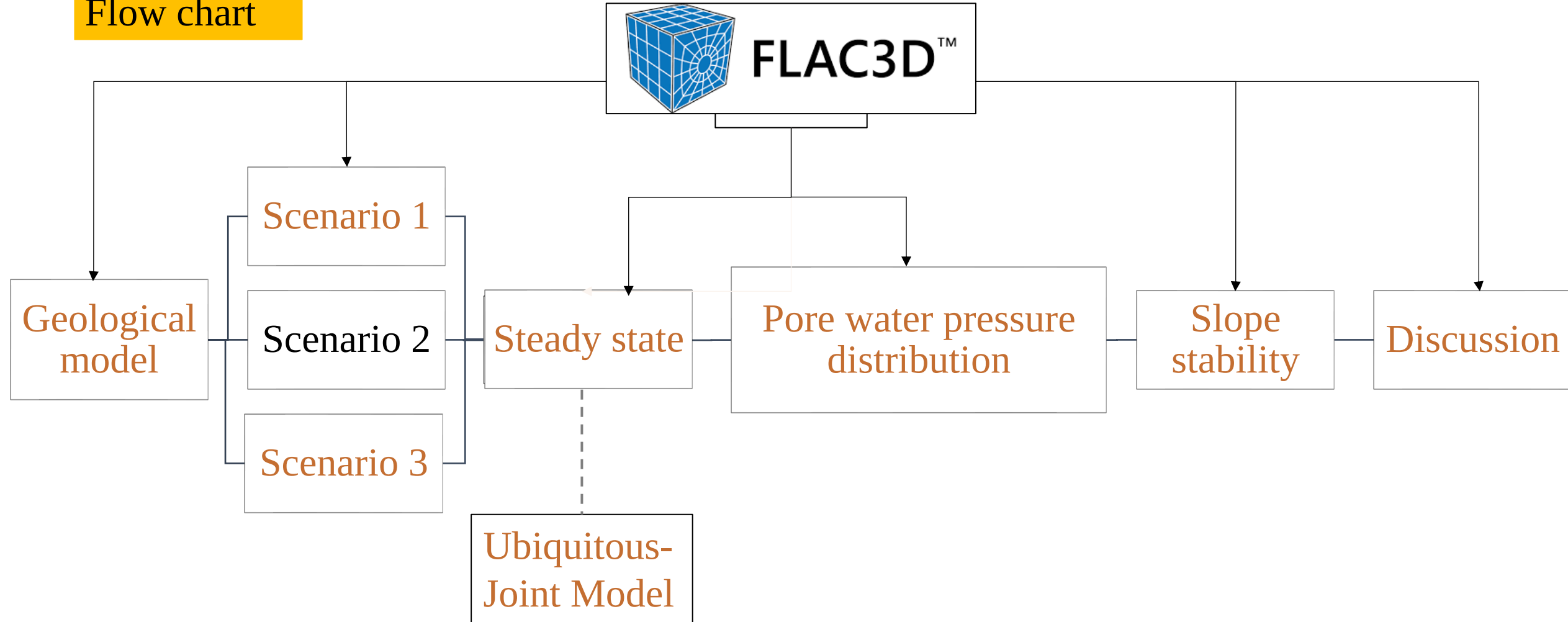
- Introduction
- Methodology
- Results
- Future work

Study area

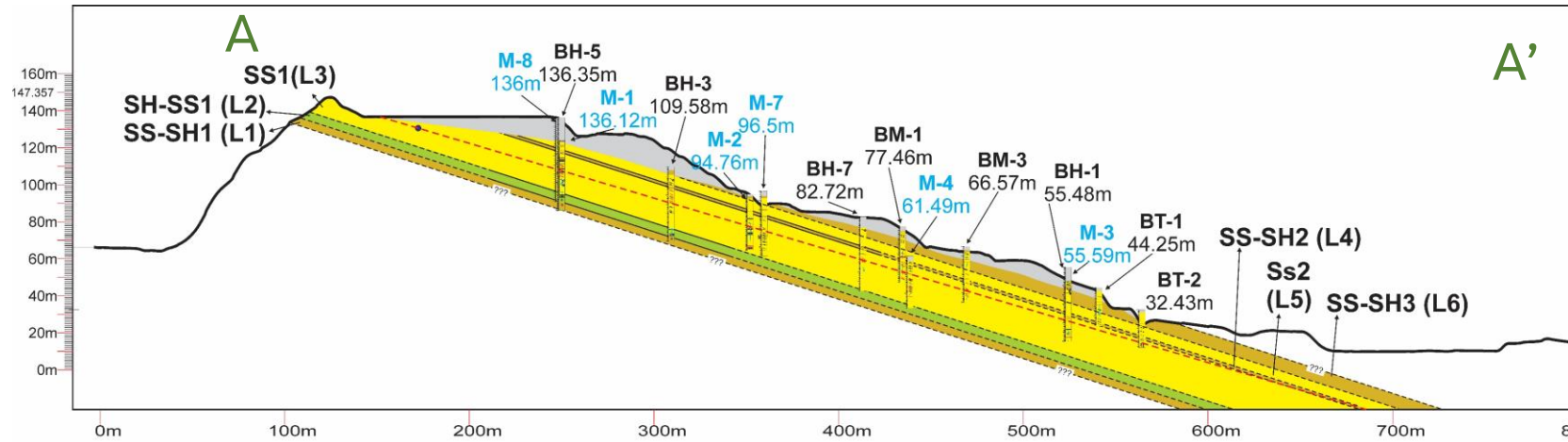


The regional geology of this study area is largely composed of the Mushan Formation (sandstone).

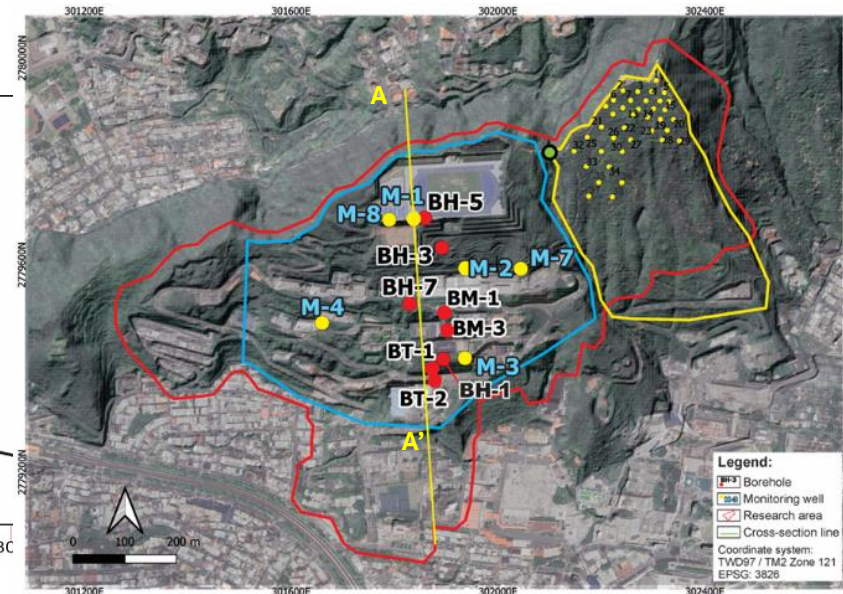
Flow chart



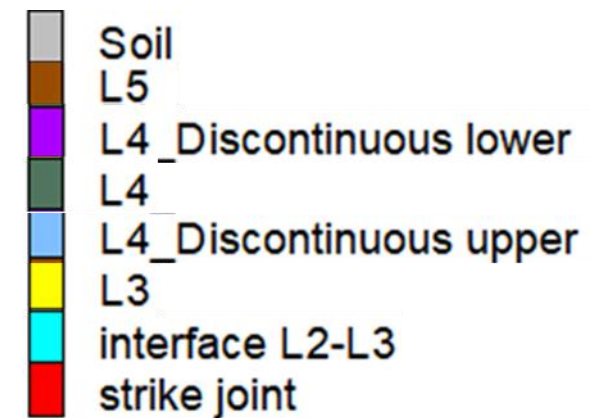
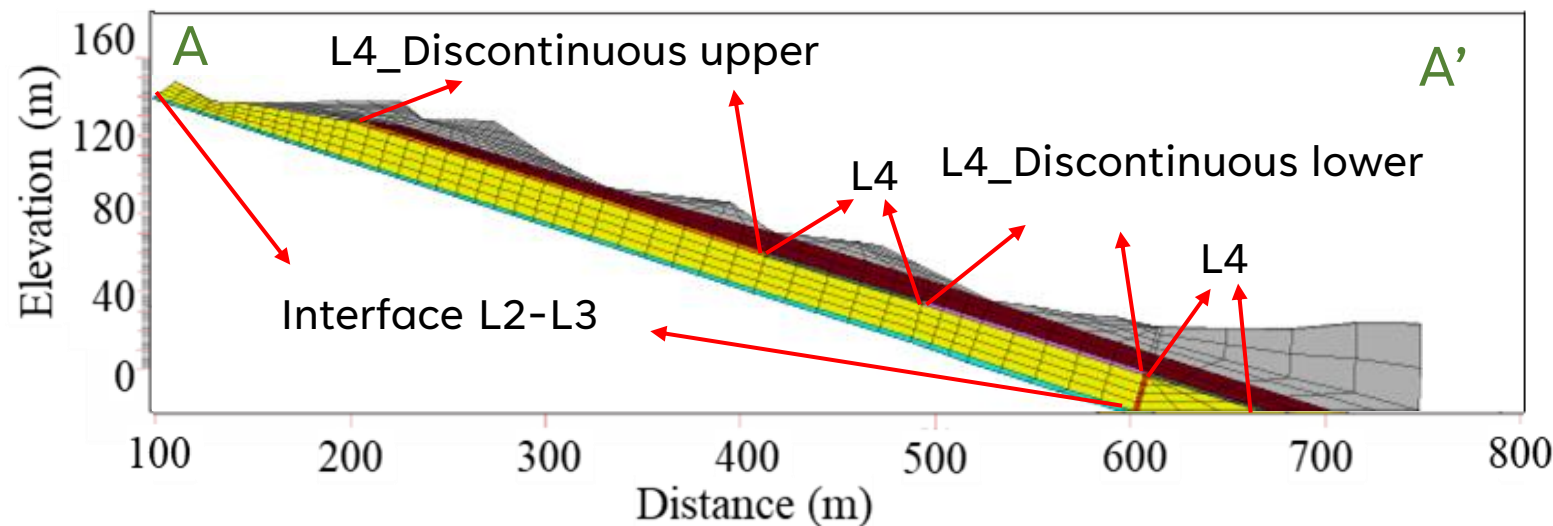
Geological model



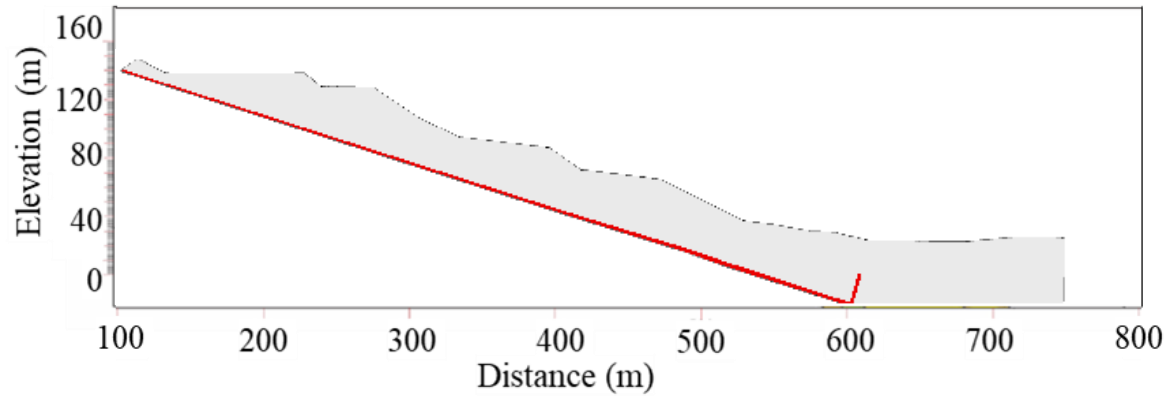
Alvian (2023)



Alvian (2023)

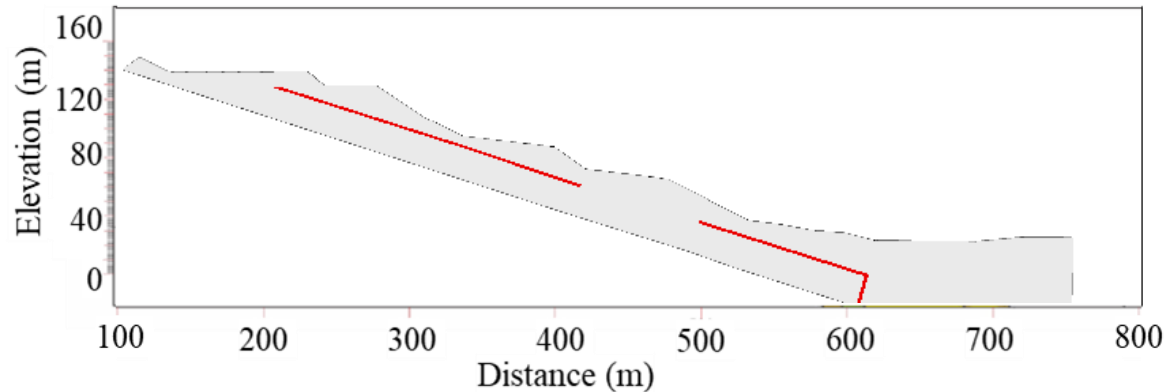


Scenario 1



Geological model
Weak plane

Scenario 3



Geological model
Weak plane

Ubiquitous-Joint Model

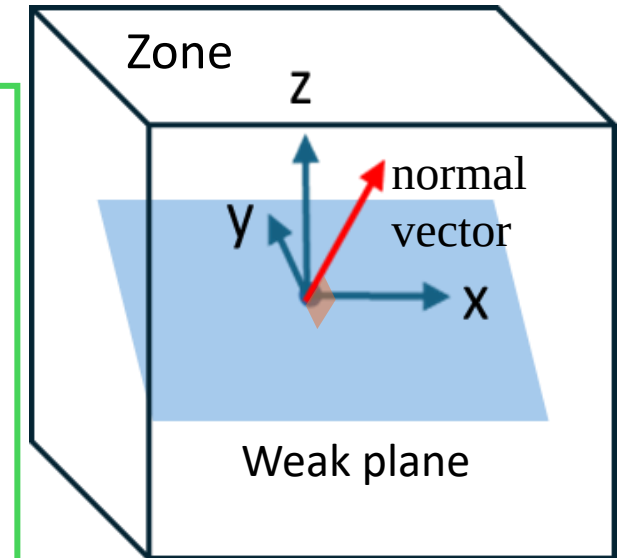
For zone setting

`cohesion f`cohesion, c `friction f`internal angle of friction, ϕ `poisson f`Poisson's ratio, ν `young f`Young's modulus, E

For joint setting

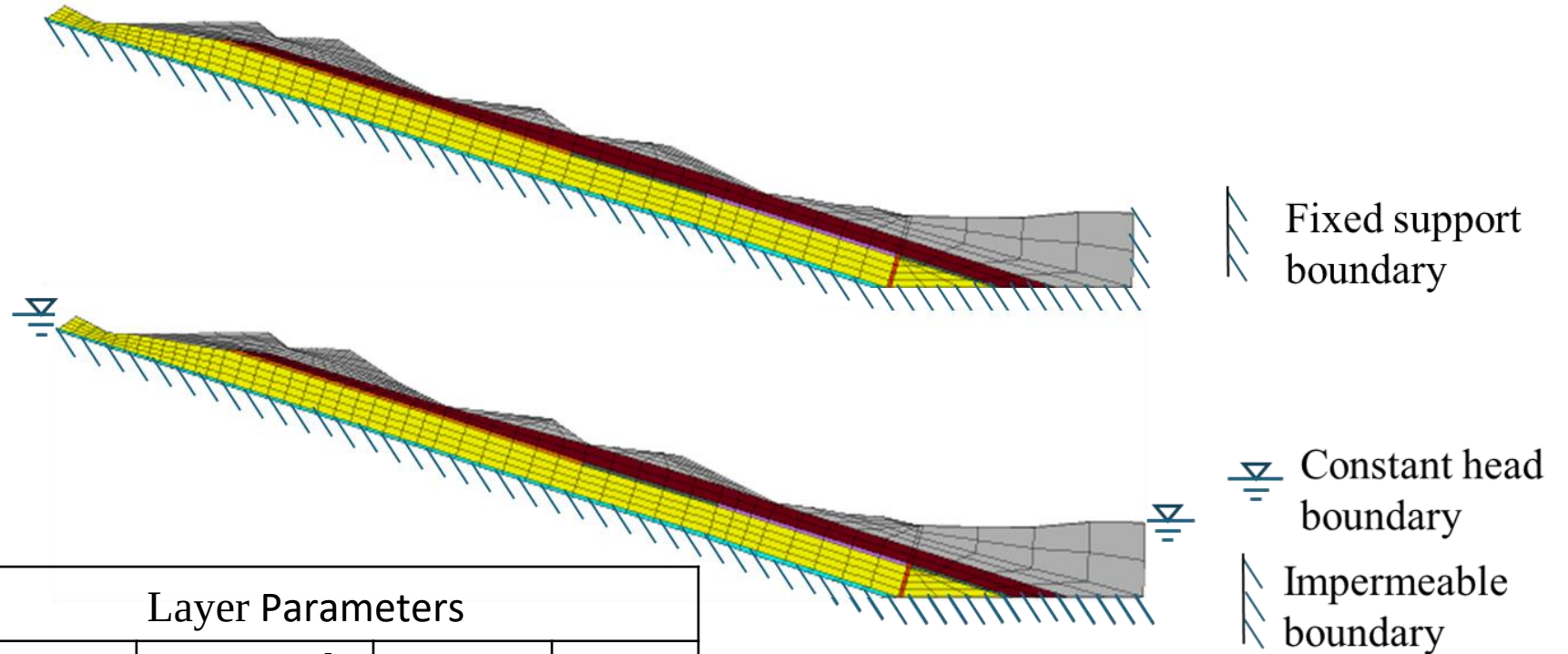
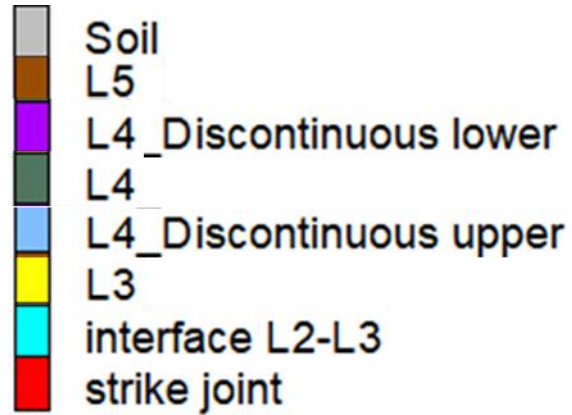
`joint-cohesion f`joint cohesion, c_j `joint-friction f`joint friction angle, ϕ_j `normal-x f` x -component of the normal direction to the weakness plane, n_x `normal-y f` y -component of the normal direction to the weakness plane, n_y `normal-z f` z -component of the normal direction to the weakness plane, n_z

Schema



The weak plane direction can be set individually within the zone.

Boundary condition and Parameters

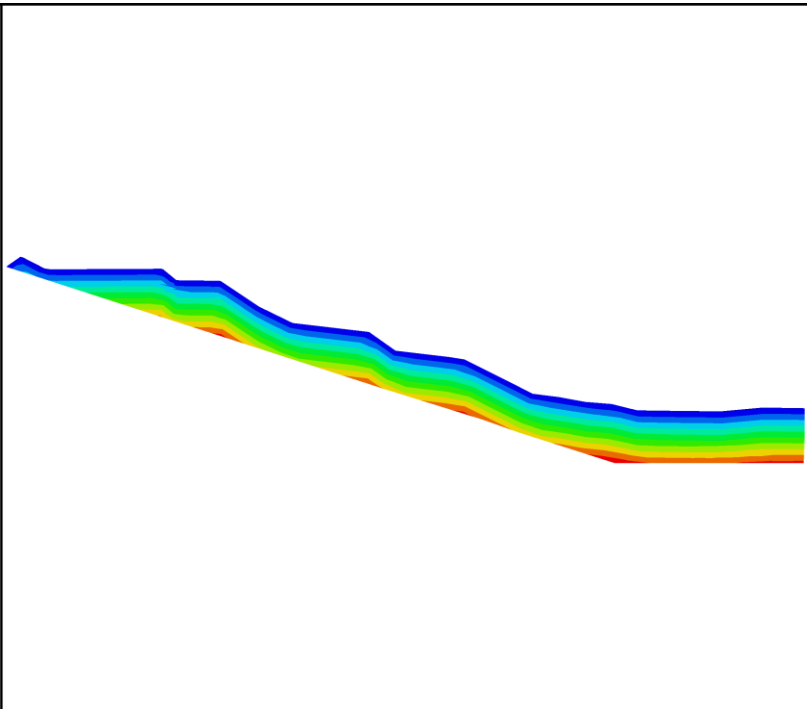
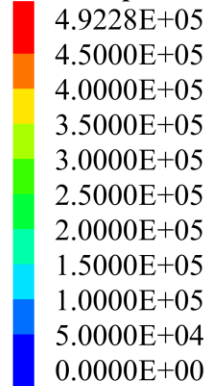


Discontinuous Parameters			Layer Parameters			
Name	c(MPa)	$\phi(^{\circ})$	Name	Unit weight (kg/m ³)	c(MPa)	$\phi(^{\circ})$
Interface L2-L3	0	20.7	L5-Soil	1960	5.6	70
Strike joint	0	20.7	Sandstone	1890	4.6	38.8
L4 discontinuous	0	20.7	Base of slope soil	1750	0.025	30

Pore pressure

FLAC3D 6.00

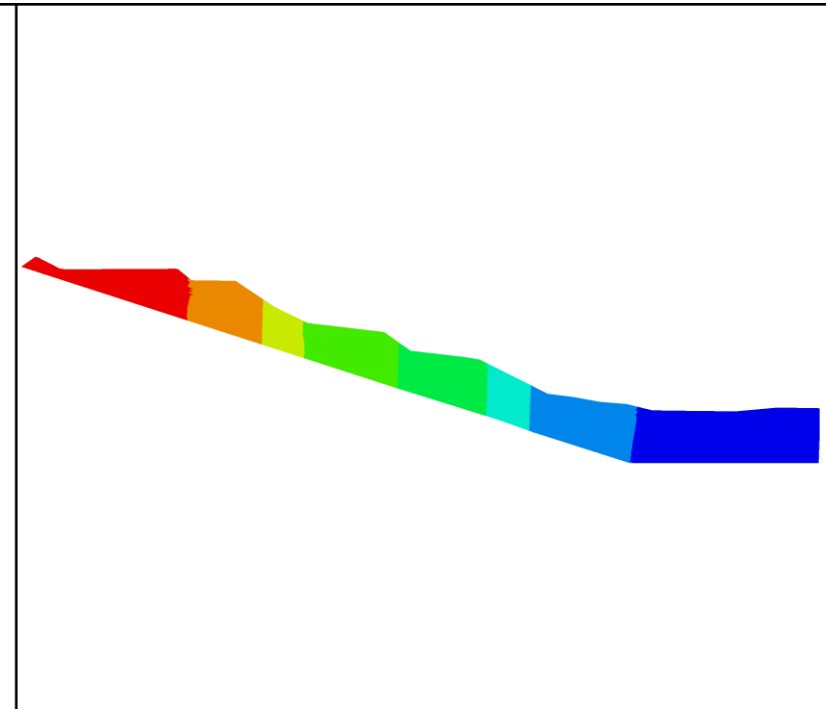
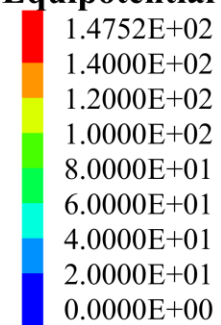
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Zone Gridpoint Pore Pressure

Equipotential line

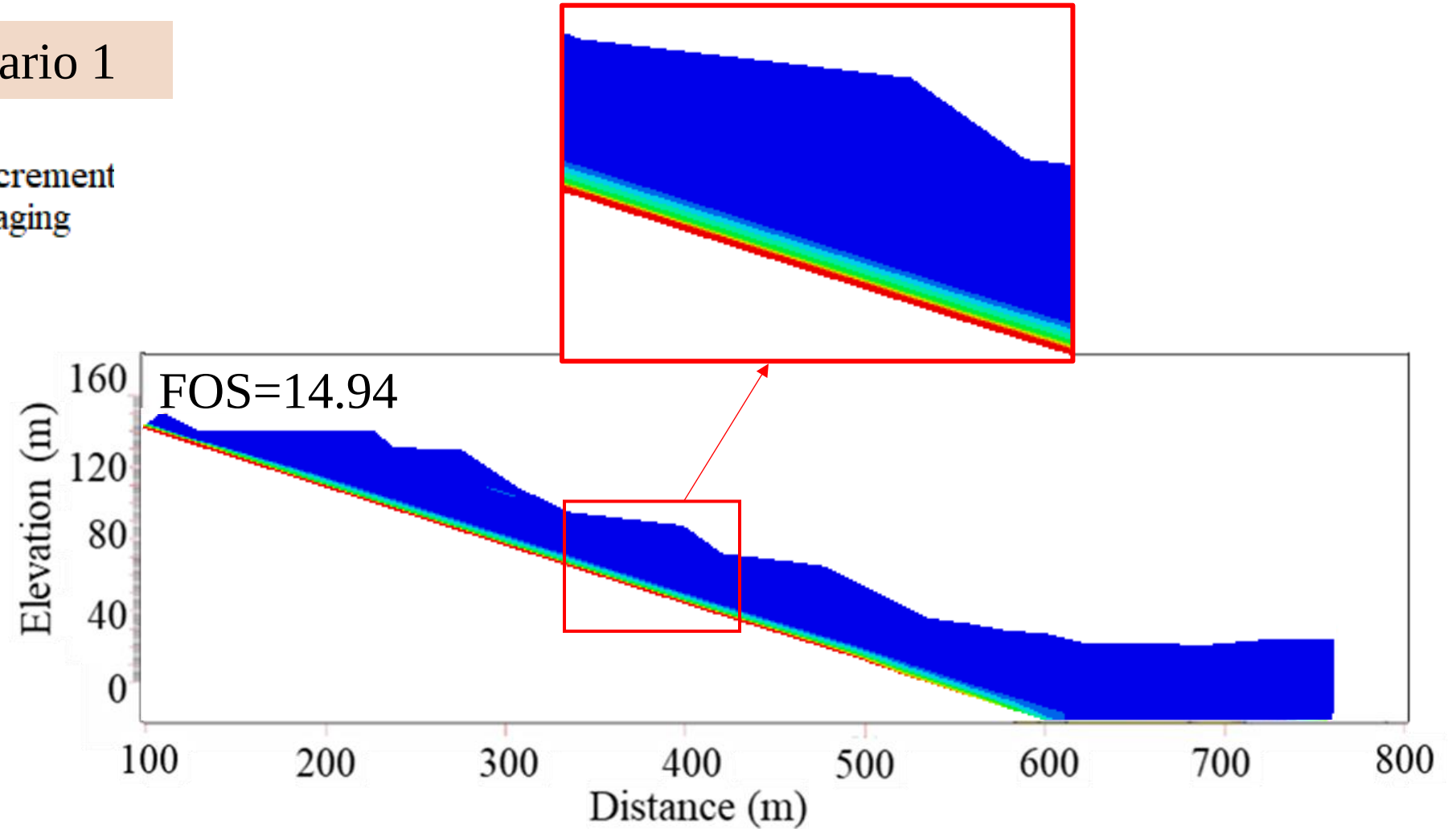
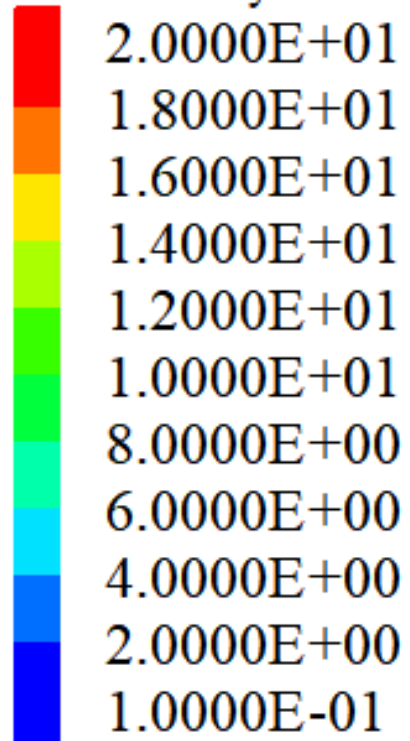
FLAC3D 6.00

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Equipotential lines

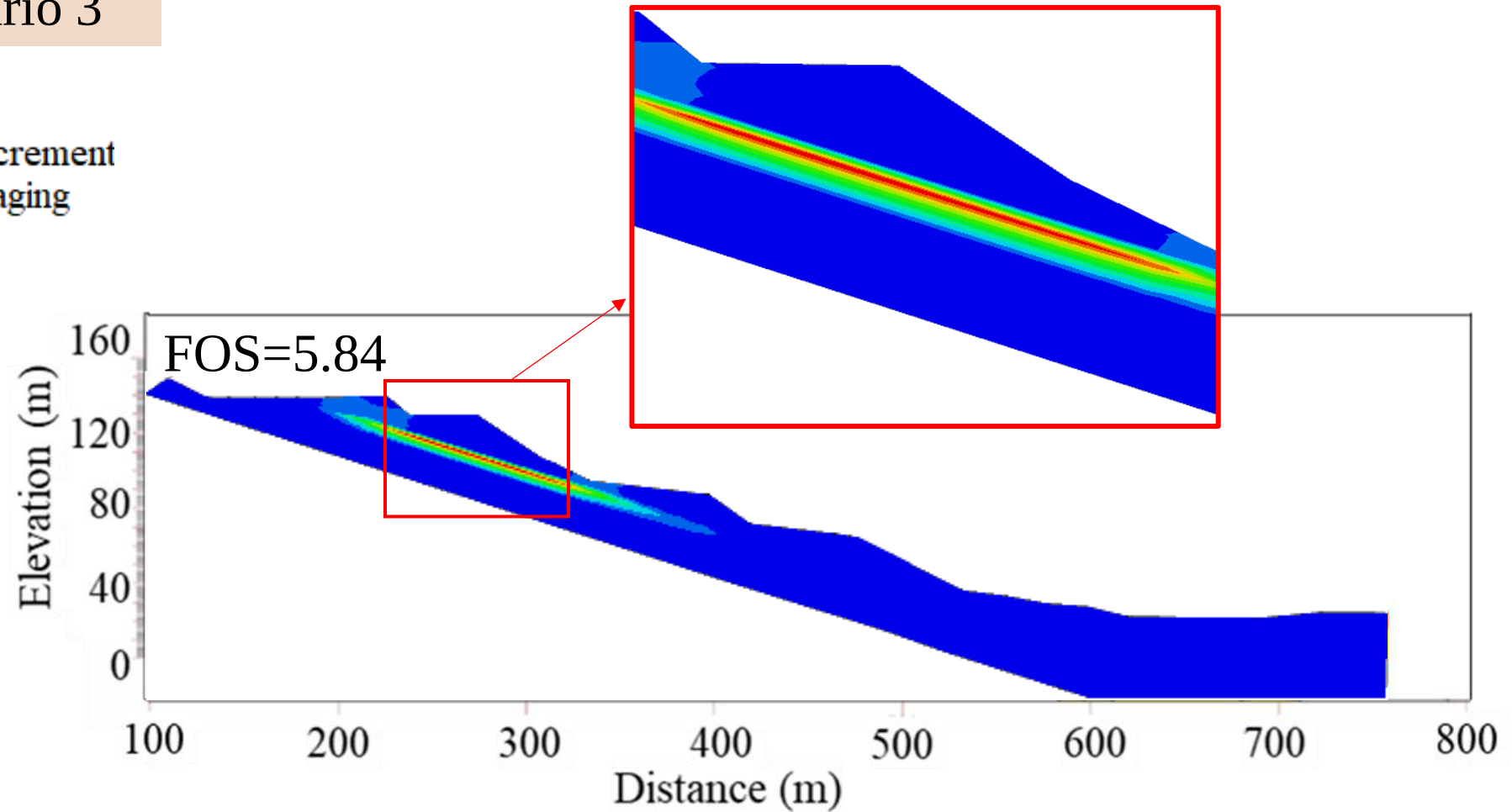
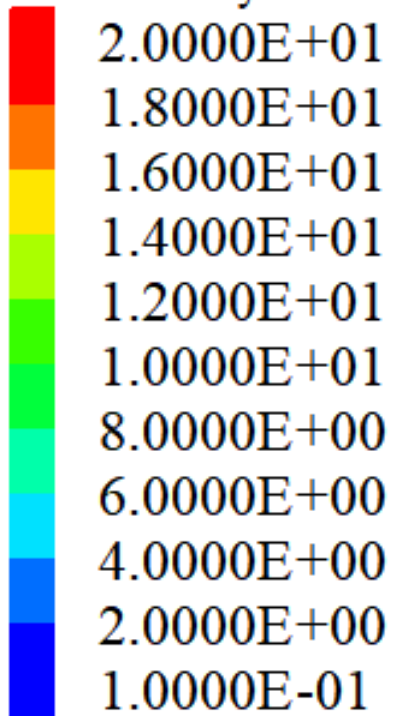
Factor of Safety of Scenario 1

Zone Maximum Shear Strain Increment
Calculated by: Volumetric Averaging



Factor of Safety of Scenario 3

Zone Maximum Shear Strain Increment
Calculated by: Volumetric Averaging



- The strike joint friction angle value will be greater than 20.7 degrees after obtaining and modifying the rock parameters. After this modification, I will analysis again.
- Scenario 2 will continue to be analyzed.

A series of thin, light brown lines forming an abstract, overlapping geometric pattern on the left side of the slide. The lines intersect to create various polygonal shapes, some of which are nested within others.

Thanks for your attention