



Saturday, November 4, 2023

<b>Paper ID number</b>	4189
<b>Paper Title</b>	INFLUENCE OF ELEPHANT GRASS ROOTS AND NUMERICAL ANALYSIS OF VOLCANIC SOIL ON DEBRIS FLOW THREATS
<b>Originality</b>	Good
<b>Quality</b>	Good
<b>Relevance</b>	Good
<b>Presentation</b>	Good
<b>Recommendation</b>	2. Accept with minor revision

**General comments**

The manuscript is well written and in good arrangement. All Tables and Figures are clear. However, there are some errors that need the authors to conduct amendment.

**Mandatory changes**

- 1) For the abstract, did the values of 0.0001m and 0.0000064 m in the statement "Model results after four days, there was a decrease of 0.0001m, and after 33 days, there was a decrease of 0.0000064 m." is referring to the height of the slope, or any? Please clarify what this value means.
- 2) For Figure 1, please label the left image as (a) and the right image as (b), and update the title of Figure 1 based on (a) and (b). Additionally, the corresponding text needs to be updated as describing in Figure 1(a) or Figure 1(b).
- 3) For Figure 2, please label the left image as (a) and the right image as (b), and update the caption of Figure 2 based on (a) and (b). Additionally, the corresponding text needs to be updated as describing Figure 2(a) or Figure 2(b).
- 4) All parameters written in text form should be in italics.
- 5) On page-6, there are two Table 5.

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### Mandatory changes

#### Introduction

1. The sources in the Introduction are adjusted to the References which are sorted alphabetically
2. Reference is sorted alphabetically
3. Reference number 21 is not found in the sentence
4. Add previous research which is stated that the elephant grass had been increase soil strength against landslides-reducing soil erosion (to show differences/support against to this research)
5. Which place is referred to in the sentence "several places" in Bali prone to landslides have tried to plant vetiver grass for water conservation and slope stabilization?

#### Research Significance

1. Provide a basic theory/reference for the consideration/selection of the use of land in aged of 4 days and 33 days.

#### 3.2 Rainfall analysis

1. Table 1 is replaced with rainfall data from 2012 - 2021 (ten years) and directly lists the results from the Pearson Type III Log at 25 years return period (as 69.76 mm). There is no need to include Log Normal and Gumbel data, unless you want to calculate/compare based on 3 rainfall data from these 3 methods.
2. How many millimeter of rain data occurred in 2020? (This rainfall was chosen because it is close to the rainfall value at the time of the landslide in 2020).

Give sources for each figure and table.

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### Mandatory changes

The paper investigates the influence of elephant grass roots and the numerical analysis of volcanic soil on debris flow threats. The research focused on the stability behavior of volcanic soil in Bali, Indonesia, under conditions of high rainfall and surface erosion. Using Plaxis 3D software for numerical analysis, the study evaluated soil stability in a test box with elephant grass and vetiver to determine slope stability. The findings showed that without vegetation, volcanic soil exhibited a soil tension of 0.6854 kN/m<sup>2</sup> and a low safety factor, indicating landslide threats. However, adding elephant grass combined with vetiver grass significantly reduced erosion (94.6% on a 45° slope and 92.67% on a 60° slope) and increased runoff effectiveness (55.48% on a 45° slope and 53.89% on a 60° slope). The study concluded that this combination of grasses effectively mitigates soil erosion and landslide risks in volcanic soils.

My comments on this work are as follows:

The title of the paper does not read well. I suggest: "Influence of grass roots on the stability of slopes: experimental modelling and numerical analysis" or something similar to this.

A discussion on long-term performance of the grass planting on soil stability is required. This will provide a more comprehensive evaluation of the effectiveness and sustainability of the proposed solution.

The authors have used Plaxis software for their analysis, which is based on the finite element method.

However, debris flow often involve large deformations, hence other numerical techniques may be more suitable for modelling this problem. I don't expect the author to re-analyse the problem using a meshfree method at this stage, but they need to at least provide a paragraph clarifying that other techniques may be more suitable for this problem. For this discussion, the author may refer and cite the following papers:

- Shafee, A. and A. Khoshghalb (2022). "Particle node-based smoothed point interpolation method with stress regularisation for large deformation problems in geomechanics." *Computers and Geotechnics* 141: 104494.
- Feng, K., Wang, G., Huang, D., & Feng, J. (2021). Material point method for large-deformation modeling of coseismic landslide and liquefaction-induced dam failure. *Soil Dynamics and Earthquake Engineering*, 150, 106907
- Shafee, A. and A. Khoshghalb (2021). "An improved node-based smoothed point interpolation method for coupled hydro-mechanical problems in geomechanics." *Computers and Geotechnics* 139: 104415.

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A bit more detailed descriptions of the numerical analysis parameters are required. This will increase the study's replicability and scientific rigor.

The authors need to add a discussion on economic analysis of the implementation costs compared to other erosion control methods, and assess the broader environmental impacts, including effects on biodiversity and water quality. This will offer a more holistic view of the method's practicality and environmental sustainability.

Gmail interface showing an email from Prof. Dr. I Nengah Sinarta. The email content includes a thank you message for a submitted paper and a metadata table.

Dear Dr. I Nengah Sinarta,

Thanks. You have successfully submitted the revised paper. We would take necessary action as early as possible.

Best regards,  
Prof. Dr. Zakaria Hossain

4189: Journal Revised paper	
Paper ID number	4189
Revised Title	INFLUENCE OF GRASS ROOTS ON THE STABILITY OF SLOPES. EXPERIMENTAL MODELLING AND NUMERICAL ANALYSIS
Full Name	Dr. I Nengah Sinarta
Corresponding Author's E-mail	<a href="mailto:inengahsinarta@gmail.com">inengahsinarta@gmail.com</a>
All-authors E-mails	<a href="mailto:aryastanaputu@gmail.com">aryastanaputu@gmail.com</a>
Seperated by Comma	<a href="mailto:windy.candrayana@gmail.com">windy.candrayana@gmail.com</a> <a href="mailto:agsudewa63@gmail.com">agsudewa63@gmail.com</a>
Revised Paper (Word)	<a href="#">I Nengah Sinarta (Geomate-English) ok_R2.docx</a>
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Gmail interface showing an email from Prof. Zakaria Hossain. The email content includes a correction notice for a submitted paper.

4189 (Important) Submitted Revised Paper Correction Notice

Prof. Zakaria Hossain <[geomatejournal@gmail.com](mailto:geomatejournal@gmail.com)>  
kepada saya, [aryastanaputu@gmail.com](mailto:aryastanaputu@gmail.com), [windy.candrayana@gmail.com](mailto:windy.candrayana@gmail.com), [agsudewa63@gmail.com](mailto:agsudewa63@gmail.com)

Rab, 13 Des 2023, 10.13

Dear authors,  
Please correct the references section.

References - Follow the attached Journal template referencing style. Last name, then abbreviation. No comma within the same author. The comma is used between the authors.

Revised Paper Submission Link:  
<https://form.jotform.com/geomate/journal-revised-paper>

Best Regards,

Prof. Zakaria Hossain (Ph.D. Kyoto University, Japan)  
Editor-in-Chief, International Journal of GEOMATE  
Chairman, International Conference of SEE & OEOMATE  
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<https://www.seeconf.org/0008-0002-0848-4228>

[Ok, I will do it.](#) [Thank you, I will do that.](#) [Noted with thanks.](#)