

Landslides, soil moisture, and land use changes in the mountainous Northern-western provinces of Rwanda: field-based research in a tropical environment

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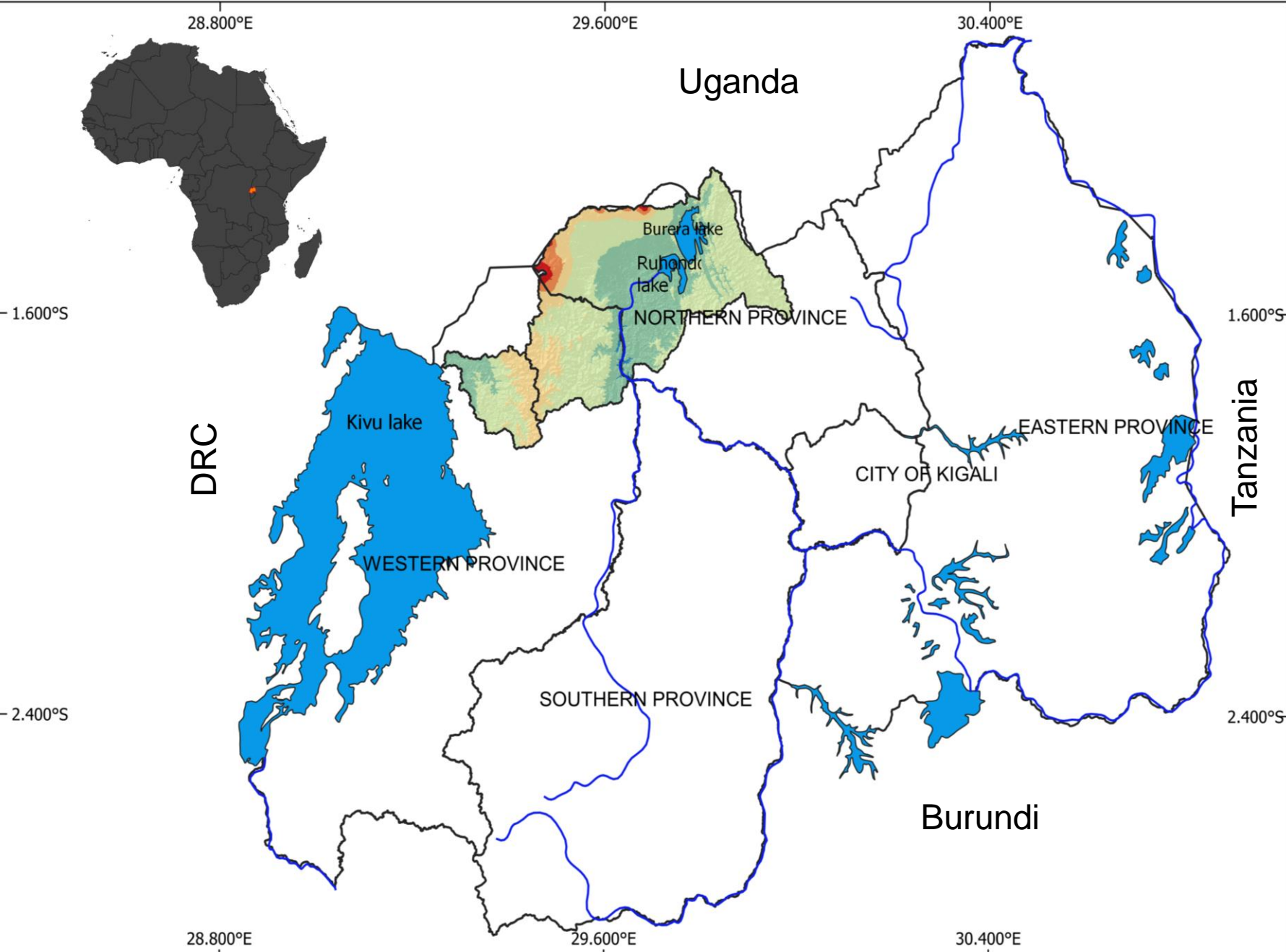
26th May 2022



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Rwanda context: steep tropical environment



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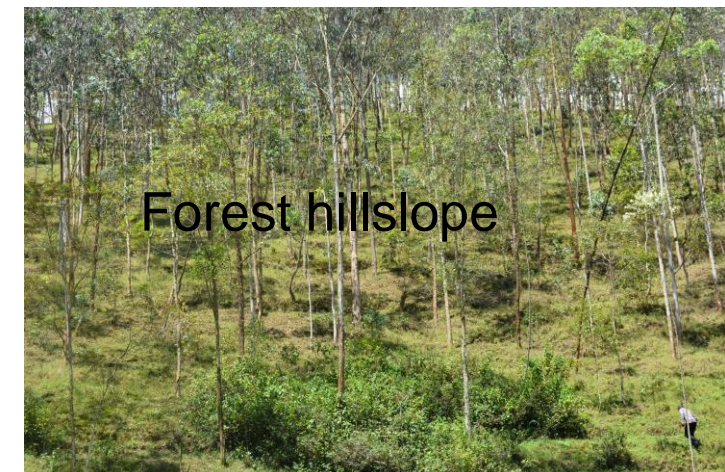
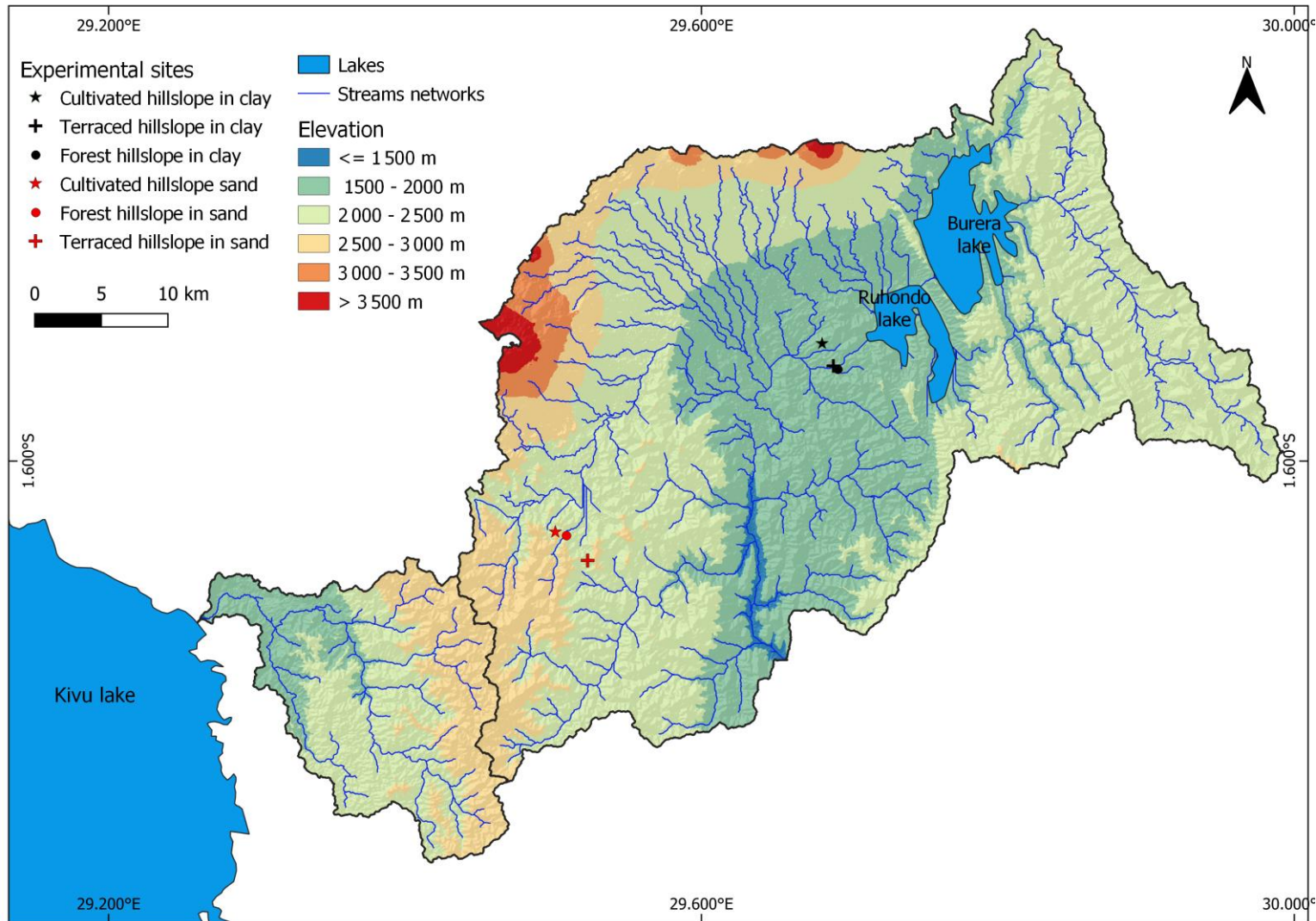


Research goal

How does soil moisture vary with respect to:

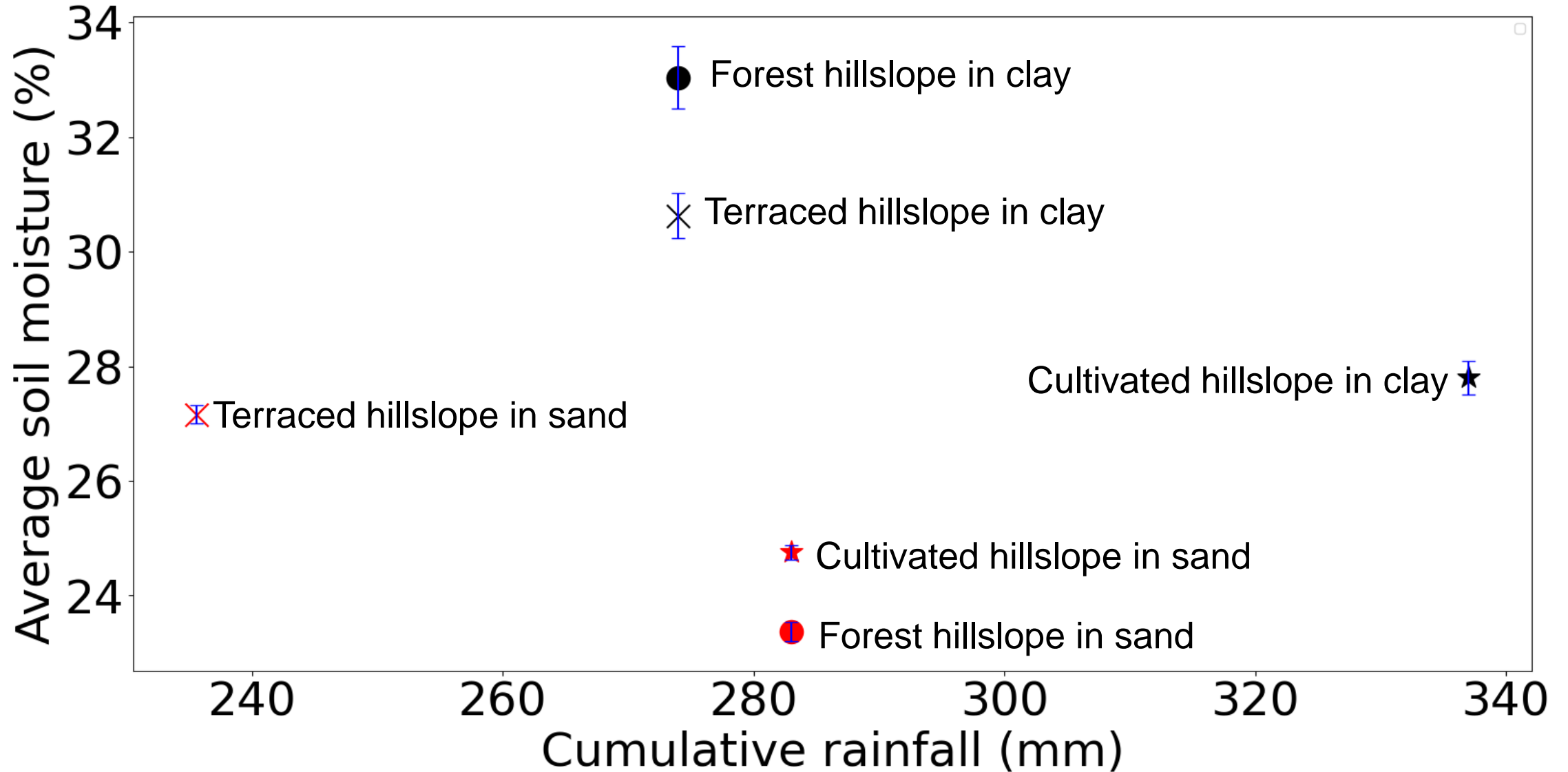
- Soil characteristics?
- Land use/cover changes?
- Land management practices?
- Soil depth?

Methodological approach



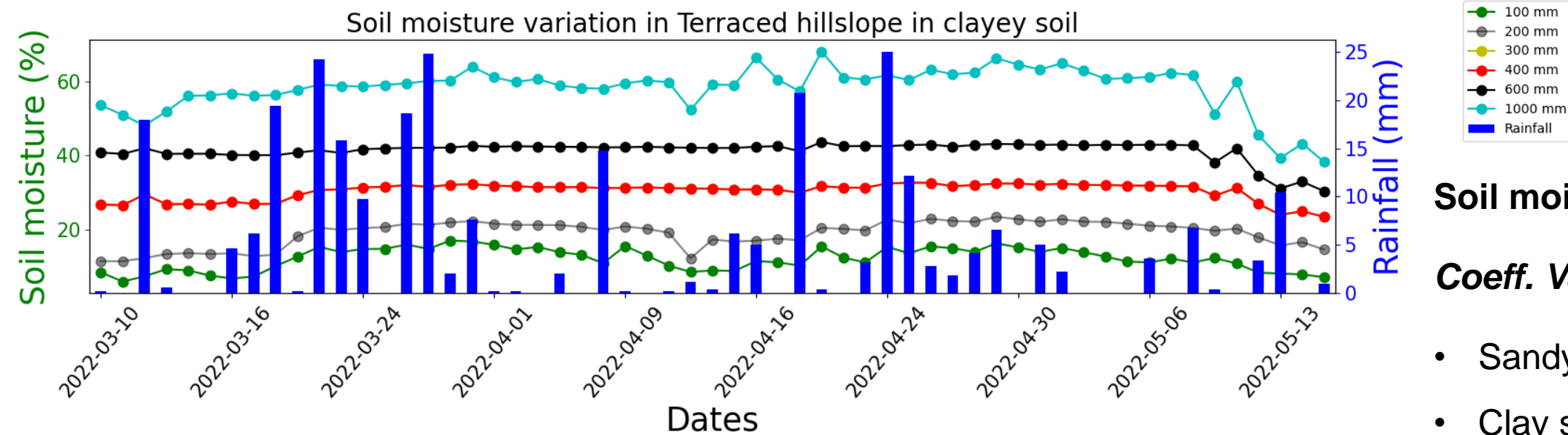
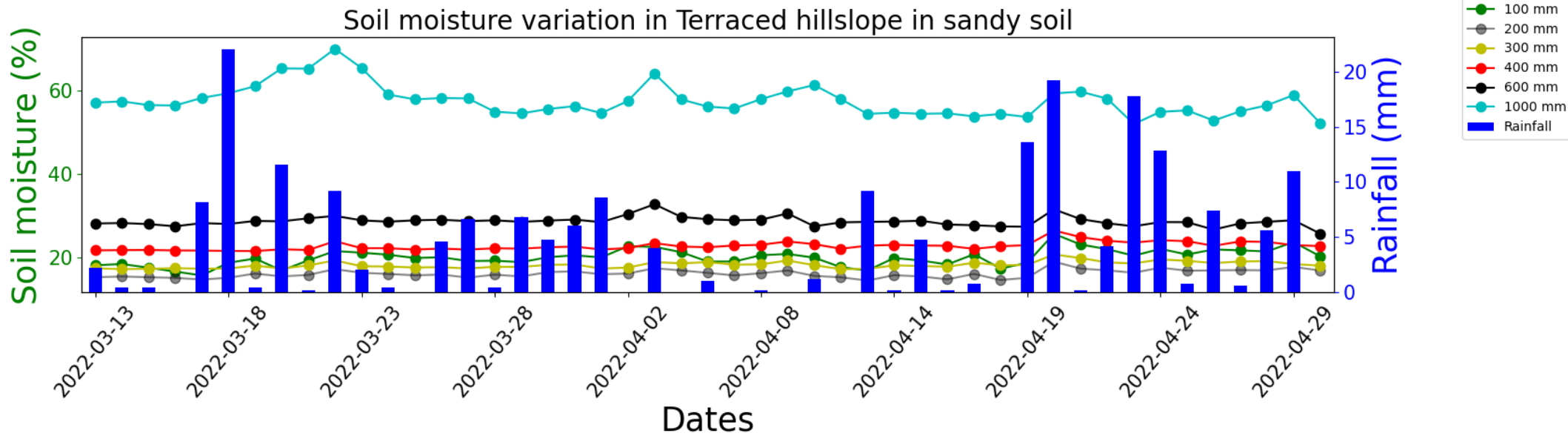
- Spatial soil moisture content
- Temporal soil moisture content
- Groundwater fluctuation

Preliminary results: Average soil moisture vs cumulative rainfall



Period: 13th March – 15th May 2022

Preliminary results: Spatio-temporal variation of soil moisture

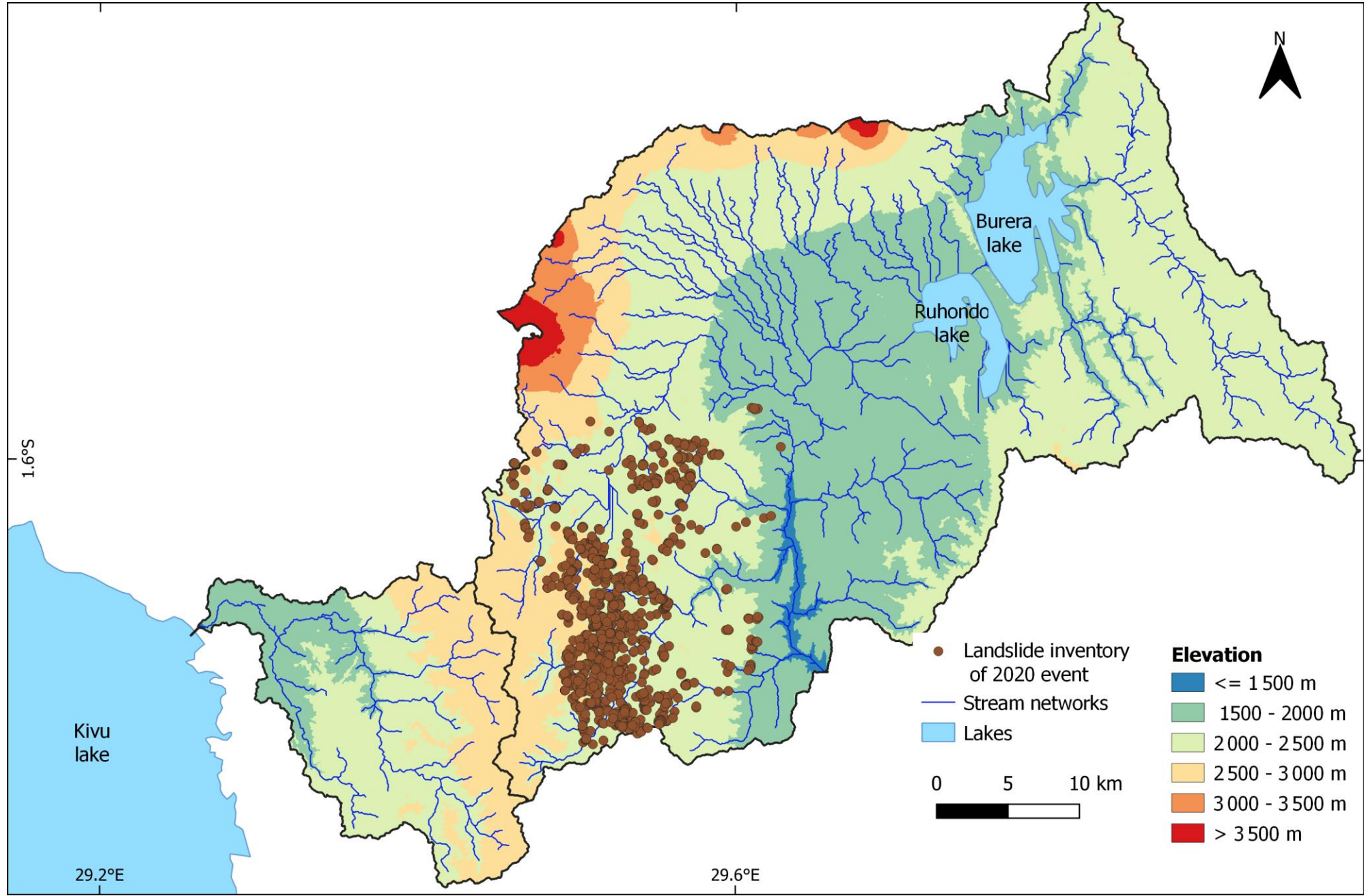


Soil moisture variation

Coeff. Var.:

- Sandy soil: 0,336
- Clay soil: 0.230

Preliminary results: Landslides inventory



Conclusion

- Soil moisture content varies mainly with respect to soil properties/characteristics
- Land management practices (agriculture terraces) contribute to the increase of soil moisture
- The agricultural terraces seem to contribute to the occurrence of landslides in NW provinces of Rwanda
- Field measurements and further analysis are ongoing
 - ➔ prediction of spatial-temporal patterns of rainfall triggered landslides at local scale in tropical and intensively cultivated environment





THANKS FOR YOUR ATTENTION!

Happy to discuss further

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