

Modeling of water erosion in a tropical watershed

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INTRODUCTION

Water erosion is the main process of soil degradation in Brazil. In this context, the objective of this work was to estimate soil losses by water erosion through the application of two prediction models and compare their results. The Revised Universal Soil Loss Equation (RUSLE), which is the most commonly used model in Brazil, and the Erosion Potential Method (EPM) were used.

MATERIAL AND METHODS

The study was carried out in 2019 in the Ribeirão José Lúcio watershed, located in Conceição do Rio Verde Municipality, south of Minas Gerais, Brazil.

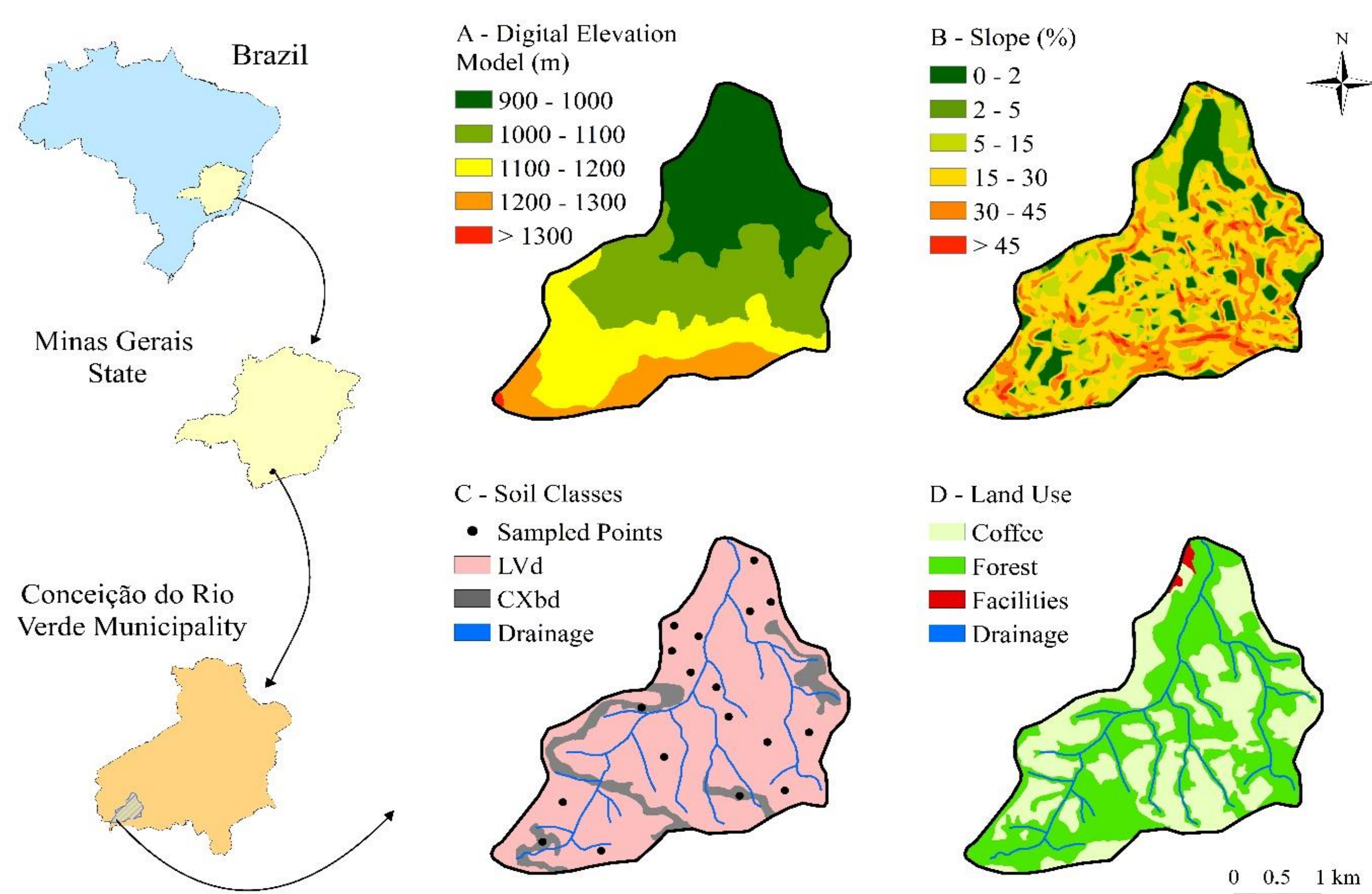


Figure 1. Map of the location, Digital Elevation Model (A), Declivity map with soil sampling points (B), Digital Soil Map (C) and Land Use Map (D) of the Ribeirão José Lúcio Sub-basin, Conceição do Rio Verde, south of Minas Gerais, Brazil. Notes: dystrophic Red Latosol (LVd) and dystrophic Tb Haplic Cambisol (CXbd).

RESULTS AND DISCUSSION

Both prediction models indicated the predominance of low erosion rates ($< 1.0 \text{ Mg ha}^{-1} \text{ year}^{-1}$). RUSLE indicated that 4.60% of the area presents severe soil loss ($> 7.5 \text{ Mg ha}^{-1} \text{ year}^{-1}$), while EPM did not detect sites with severe erosion ($> 7.5 \text{ Mg ha}^{-1} \text{ year}^{-1}$).

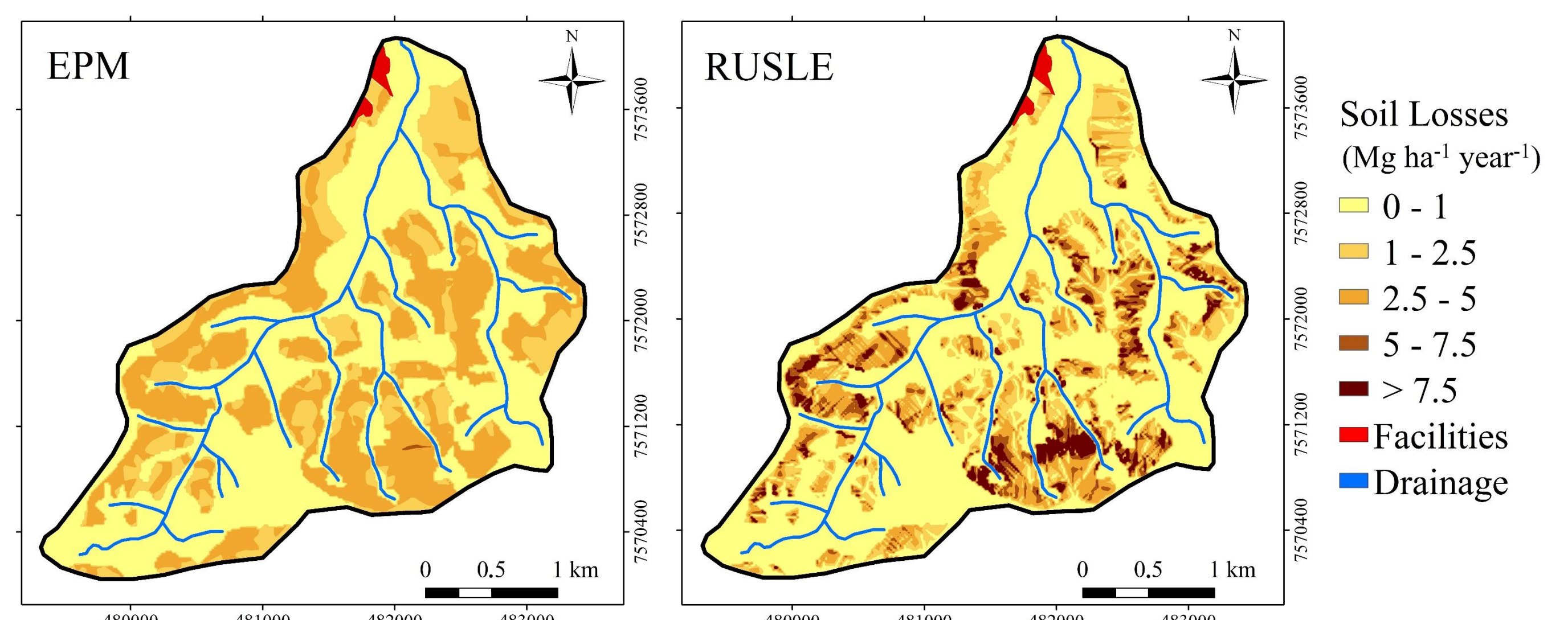


Figure 2. Spatial distribution of the soil loss estimates of EPM and RUSLE in the José Lúcio Creek subbasin, Conceição do Rio Verde, southern of Minas Gerais, Brazil..

CONCLUSIONS

In general, both methods had the advantage of simulating the erosion process quickly, with low investment, and with easy input data obtaining.

ACKNOWLEDGEMENTS

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