

## **Erosion susceptibility diagnosis in the Bonfim River Basin, Petrópolis, Rio de Janeiro State**

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The Bonfim river basin located in Petrópolis in the state of Rio de Janeiro drains the opposite mountainous slope of the Serra do Mar range escarpments. The local morphology shows rocky abrupt features and drainage controlled by bedrock litho-structures. The main channel of the region is the Piabanha River, which flows to the Paraíba do Sul River. The high tropical climate of the mountainous areas of Serra dos Órgãos range is influenced by orography and oceanic humidity factors, resulting in a very high pluviosity in the mountainous study area, decreasing downhill. The thematic maps of geology, geomorphology, pedology, slope angle, topographic compartmentation, ecosystems, land use and vegetation cover, made during the first steps of the project, were converted into digital basemaps and georeferenced using the software SAGA (Geoenvironmental Analysis System), after what the cross-analyses and overlays were done, performing the environmental analyses. It was possible to evaluate the natural vulnerability of the basin, and associate to its physical features and relate them to the land use, an socio-economic factor. The research identified 48 environmental units from the cross-analyses of the digital thematic maps mentioned above, which made possible the identification of the actual use and the recommendation for a new use based on the natural vocation of the basin.