

GEOMORPHIC UNITS MAPPING OF FLUVIOKARST LANDSCAPES IN CENTRAL BRAZILIAN HIGHLANDS

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The karst terrains of Brazilian central highlands are under growing agricultural impacts. The present work is part of a greater research project aiming at creating knowledge for the management plans for the protection of caves heritage in an environmentally protected area of the River Vermelho (1762,4,3km²), within the Correntes Basin (3904,3km²) situated in central Brazil. The area consists of limestones from the Proterozoic Bambui Group under Cretaceous sandstones from Urucuia Group.

A GIS-based relief compartments mapping of the area is done using satellite images (ALOSPALSAR), geological map (SIEG), cave location map (CANIE BRASIL) combined with several field trips. We identified four Geomorphic units. 1-Lowlands (282,9km²): base-level in siltites and carbonates, with an average slope of 5%, 0,32% covered by concavities, and drainage density in 0.21 d/km². 2-karst terrains (994,6km²): developed in carbonates trapped by siltstone lenses, the average slope of 9.5%, 0.23% of concavities, and drainage density is 0.22 d/km². 3-talus (1483km²): with colluvial and alluvial deposits formed by the Urucuia escarpment retreat, the average slope of 7%, 0.10% of concavities, and drainage density is 0.26 d/km². 4- Highlands (1143,7km²): formed over the sandstone of Urucuia Group with an average slope of 3%, 0.12% of concavities, and drainage density is 0.30%. We also identified two abrupt contacts, the first lowland-karst terrain and second a talus-highlands resulted in canyons and escarpments, respectively. We identified two types of caves: as superior, vadose that collect floods from hillslopes (ducts are often filled with paleosediments, with signs of paragenesis), and deep epigenic fluviokarst. The underlying hypothesis is that the sandstone aquifer and nearby siltstone are the sources of water and silty sediments for the caves, respectively. That is the reason we are applying integrated analysis based on hydrology, geochemistry, sedimentology, geochronology and geophysics. The results of the present project will help in designing better future management plans for the area.

Keywords: Fluviokarst; Relief compartments