

## **The debris flow in Lavrinhas: stratigraphical and sedimentological features for debris flow risk assessment.**

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The Christmas season of 1986 brings sad memories to the little rural village of Retiro dos Barbosas, at Lavrinhas city, located at the Serra da Mantiqueira Mountainous Range, in the border of São Paulo and Minas Gerais states, in southeast Brazil. At December 26<sup>th</sup>, heavy rainfalls triggered numerous landslides, debris flows and floods with high transport energy, at the Jacu River drainage valley. Twelve people died as a result of this mass movement.

This work presents some stratigraphic and sedimentary features, typical of debris flow depositional processes, observed and analyzed from the field studies made at Lavrinhas a few days after the event. The debris flow deposits show sedimentary structures and textures, such as levees, inverse grading, preferred orientation and imbrication of pebbles, preservation of delicate clasts and the presence of large boulders supported in a matrix containing substantial amounts of fine grained sediment. Important textural characteristics related to debris flow are positive skewness, bimodal distribution, poor grain selection and high content of granular material. The identification of those sedimentological patterns help recognize typical deposits of debris flow. In humid tropics, debris flow is an important mass movement process to the landscape evolution, and must show recurrence in the stratigraphic record, especially in mountainous terrains.

The debris flow deposits show sedimentary patterns and stratigraphic relations, useful to identify prone areas to the occurrence of the phenomenon. Sediment sequence and composition of some deposits in mountainous areas can serve as geoindicators, helping to identify risk areas to debris flows.