



Soil physical proprieties and Morphological Watershed related to Mass Movement, Serra do Mar Mountain Range, Brazil

Rebeca Durço Coelho (1), Vivian Cristina Dias (2), Helen Cristina Dias (3), Bianca Carvalho Vieira (4), and Tiago Damas Martins (5)

(1) Department of Geography, USP - University of São Paulo, São Paulo, Brazil (rebeca.coelho@usp.br), (2) Department of Geography, USP - University of São Paulo, São Paulo, Brazil (vivian.cristina.dias@usp.br), (3) Department of Geography, USP - University of São Paulo, São Paulo, Brazil (helen.dias@usp.br), (4) Department of Geography, USP - University of São Paulo, São Paulo, Brazil (biancacv@usp.br), (5) Cities Institute, UNIFESP - Federal University of São Paulo, São Paulo, Brazil (martins.td@gmail.com)

In Brazil, every year occurs mass movements processes causing loss of life, homeless and economic losses. One of the most affected landscape by these processes in Brazil is Serra do Mar mountain range, which extends for about 1.500 km, along with the southeast coast of Brazil. This region has significant economic importance since it is crossed by rail and highways that connect Brazilian largest metropolis: São Paulo and Rio de Janeiro, to their hinterland as well as to the port of Santos, the busiest in the South American.

The aim was to evaluate the soil physical proprieties (texture) and some morphological watershed related to Mass Movement, Serra do Mar Mountain Range, Brazil.

For the soil physical proprieties, we defined two different soil profiles, as P1 - without landslides scar and P2 - with a landslides scar. For each one, around 10 samples were obtained, reaching approximately 3 m. For the morphological watershed, the following parameters were selected: area above 25°, drainage density, drainage hierarchy, longitudinal profile, basin relief, roughness index and relief ratio.

The results pointed out that only the P2 presented a significant particle size distribution discontinuity in greater depths. The watershed presented characteristics favorable to the occurrence of debris flow, such as high values of drainage density and altimetric ranges and approximately 1/3 of its total area is located in areas with angles above 25°. Thus, the results showed that the watershed is susceptible to landslides and debris flow, even favoring the combined occurrence of these two processes, as in the 1967 event, since those landslides provide materials for transportation and initiation of the debris flow in the drainage.