



Identification and characterization of natural pipe systems in forested tropical soils

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Erosive processes on soil surface have been well studied and comprehended by several researchers, however little is known about subsurface erosive processes (piping). Piping is a type of subsurface erosion caused by water flowing in the subsurface and is still considered one of the most difficult erosive processes to be studied. Several processes have been considered as responsible for subsurface erosion and their interaction is complex and difficult to be studied separately. Surface investigations on their own may underestimate the erosion processes, due to the possible occurrence of subsurface processes that are not yet exposed on the surface. The network of subsurface processes should also be understood to better control erosion. Conservation practices that focus on water runoff control may be inefficient if the subsurface flow is not considered. In this study, we aimed to identify and characterize subsurface cavities in the field, as well as understand the network of these cavities, by using geophysical methods (electrical tomography). The study area is situated at the Experimental Station of Tupi, state of São Paulo, Brazil. The soil of the area was classified as Hapludults. The area presents several erosive features, ranging from laminar to permanent gullies and subsurface erosions. The geophysical equipment used was the Terrameter LS resistivity meter, manufactured by ABEM Instruments. The method of electrical tomography was efficient to detect collapsed and non-collapsed pipes. The results presented valuable information to detect areas of risk.