**Mapping of landslide susceptibility in the region of the Serra do Mar in the State of Rio de Janeiro**

Abstract: The identification of risk areas of sliding is of greatest importance to protect lives and organize the occupation of the territory. The processes that trigger landslides can be as natural as induced by man. Human occupation in places of slopes is an example of man-induced process, where there is an acceleration of erosion once the natural environment has been modified, with an increase of shallow runoff. The Serra do Mar is a set of slopes extending from the State of Rio de Janeiro to Santa Catarina, near the coastal plain, where tourist poles are concentrated and important ports of the Brazil. The study area, Angra dos Reis, is located in the Serra do Mar and stood out after the episode of 2010, which saw a huge landslide that killed 53 people, leaving 4,500 people displaced and more than 1000 homeless. The example of this occurred may not be an isolated fact, since climate change may result in an increased frequency of extreme events, especially high intensity rainfall. The history of occupation of the municipality near the coastal plain demand attention, given that some constructs are advancing toward the slopes. The geographic information System (GIS) can assist in the mapping of areas susceptible to landslides, since he is able to combine information from different sources, integrate them and generate new maps. Thus, remote sensing images were used as the basis for the mapping of the land use and land cover in the study region and additional information were raised as geomorphology, geology and topographic data, which were inserted into a geo-referenced database. The technique of spatial inference Fuzzy Gamma was used to generate the map of susceptibility. Areas with high degree of susceptibility have been identified and compared with risk areas mapped by CPRM (Geological Survey of Brazil) and provided by CEMADEN (National Center for Natural Disaster Monitoring and Alerting). This step is important especially to assess the methodology adherence to evaluate the classes that was mapped with high and very high susceptibility. This study helped to identify the potential of Fuzzy Gamma technique in mapping areas with high degree of susceptibility to landslide that can be used in locations that do not have hazardous areas mapped. This type of mapping is of overriding importance, because it may direct the occupation of territory by means of environmental zoning, as well as subsidizing public policies and assist in the decision making.