POTENTIALITY TO WILDFIRE OCCURENCE GEOECOLOGICAL MAPPING IN PEDRA BRANCA MASSIF, RIO DE JANEIRO, BRAZIL.

Mota de Sousa Gustavo
Universidade Federal do Rio de Janeiro
gustavobond@gmail.com
Brasil

The aim of this paper is to present the methodology of geoecological mapping applied to the wildfire potentiality occurence, using geoprocessing technologies as DEM, Remote Sensing and GIS. This paper falls within the research "Measurements Evaluates In Real Surface in Geoecological Analyses of Pedra Branca Massif", which has been developed by Federal University of Rio de Janeiro (UFRJ), Geography Department, Laboratory of Cartography (GEOCART).

The city of Rio de Janeiro has two different relief compartments, the coastal massifs and plain areas. One of these is the Pedra Branca massif, with an area circa 197.27 km2 in the western of the municipality, between 22 ° 55 'and 23 ° 05' S parallels and 43 ° 20 'and 43 ° 40' W meridians. The study area was limited by 40 meters contour line to isolate it from Tijuca massif. Pedra Branca massif suffers fire frequently over its history. That has a part of Atlantic Forest remainder and is also one area of urban forest in Rio de Janeiro City, has a rough relief with high height variations.

Environmental analyses in an integratives way, as the geoecologied one, are developed nowadays painting to a better knowledge of the landscape. Geoecology (Landscape Ecology) contains inside itself, the Geoecology Cartography, which together geoprocessing techniques, has importants scientific contributions to landscape analyses. An example of these analyses may be define by wildfire dynamics, that through a geoecological mapping methodology for wildfire potentiality occurence, shows a important tool to analyze the several processes in landscape decision management.

The potentiality to wildfires is definied by a self action of the landscape (susceptibility to fire occurences) and from human actions (fire risks), which speeds up the landscape dynamics. The concept of risk becomes essential for developing this research and is inserted in the geoecological studies which use geoprocessing support, thus, featuring the environmental risk. The risk map development uses the following socio-economic variables: Garbage burning, pointed in urban census sectors (found in the 2000 Demographic Census, of the Geography and Statistics Brazilian Institute – IBGE); Pedra Branca routes and access data (Pereira Passos Institute – IPP/RJ) and finally the existing slum and lot areas.

The concept of susceptibility to fires occurrence use several layers of functional structures as shape, aspect map, geomorfological map and solar radiation map was done through an analytical-integrative approach. This methodology is the support to develop a susceptibility map for fire occurrence in 1:10000 scale. All maps was supported on cartographic basis 1:10000 scale, catastral maps, as well as Digital Elevation Model. Aspect, slope, geomorfological shape and solar radiation maps was also supported by the same maps and DEM. The landuse was done supported form 18 orthophotos in the same scale.

The developed maps obtained by mapping processes application was evaluated over two area of old forest fires, pointed to satisfactory results, showing intervals of high and average fire potentiality between 94 and 6% respectively. These data was delivered to Non-Governmental Organizations

and authorities of Pedra Branca State Park area and it's expected that the results serve as a strategic planning to combat wildfires.