

EVALUATION OF THE USE OF OBSERVATION IN REAL SURFACE FOR GEOECOLOGICS ANALYSIS OF THE LANDSCAPE DYNAMIC: A CASE STUDY IN THE MASSIF OF TIJUCA - RJ - BRAZIL

FERNANDES M.C.(1), SANTOS T.L.C.(2), MENEZES P.M.L.(1)

(1) UFRJ, RIO DE JANEIRO, BRAZIL ; (2) Space Imaging do Brasil, RIO DE JANEIRO, BRAZIL

The landscape dynamics is a geoecology characteristic that defines changes in a landscape structure and function in an established time scale. The analysis of this characteristic is important because it shows within a period of time the behavior of the changes of the landscape, which can be used to generate predictions of the structure of that landscape, and consequently, its functionality. In this kind of analysis geoprocessing is an essential tool, because it congregates several technologies that help in this work.

However, some questions arise and they need to be solved through scientific investigations. One of these questions is that there is no consideration of the dimension of the data and the information to be used, which are not measured from observations on real surface, thus it cannot interpret the structure, function and dynamics of geoecology elements of a landscape correctly. This difference is greater in landscape of irregular relief. Even having a range of options to work with the dimensionality of the elements of a landscape, like the use of digital terrain models (DTM), geoprocessing has a limitation established by the non-consideration of the irregularity of the area to be examined. In this sense, even when working with 3D data, the area is not taken into account as being continuous, endowed with relief, so measurements of area and distance of the elements that make up the landscape may be under-estimated, particularly in areas with a rough relief. In seeking to interpret the variation of observations in real and planimetric surface in the analysis of the dynamics of a landscape, an assessment of that variation was drawn up in two maps of land use and soil cover from two different seasons and in the analytic-integrative outcome of the forestry dynamics derived from the combination of these two maps of structural and functional elements.

The area used for the study is the Massif of Tijuca. Located in Rio de Janeiro (Brazil), this geomorphological feature has a very rugged topography, where the analysis of observations in real surface is quite relevant. The study was conducted using maps of landscape coverage between 1972 and 1996, on a scale of 1:10.000.

For this analyses were created three forestry dynamics classes: forest retraction, preservation and non-forested area. By assessing the differences in kilometers and percentage of observations in real surface and planimetric surface for the classes of forestry dynamics it is possible pointing out the increase in the areas of classes observed in real surface. The differences vary from 3.05 km² at the class retraction to 9.02 km² of the class of non-forested area. In percentages, differences were more significant in the classes of preservation (17.69%) and retraction (17.10%). These differences are linked to spatial distribution of these classes, because the areas of preservation are located at the higher and rugged parts of the Massif, followed by the retraction areas that are in the intermediate zones and non-forested area, which are located in zones of lower altitude and are less rugged. This framework characterizes the process of forestry dynamics of the Massif of Tijuca which is directed from the lowest to the highest areas.

This survey showed higher values in comparison with observations in planimetric surface, characterising closer interpretations of how the structural and functional elements and analyses made from these are structured in the landscape.