Open Source Tools for Integrated Production Information on Forest Areas – Case Study: Spatial Analysis of Forest Fragments in Rio Grande Do Sul State, Brazil.

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SUMMARY

The monitoring activities of forests aims to qualify and quantify properly and provide information necessary for the production of consumer goods in a sustainable manner. In this context, the GIS market in Brazil, like many other countries, but has developed very predominantly, the marketing of computer applications based on the acquisition of licenses. Thus, there is a very large workspace and diverse to develop research with the goal of creating new tools for data processing by integrating existing Open Source tools but also to produce new technologies for spatial analysis resources natural. The Brazilian Federal Universities, Government institutions and the community that develops free software in Brazil, has achieved a very significant and successful, for the production of knowledge and new developments in Open Source GIS. The software I3Geo, produced by the Ministry of Environment, in a web environment, presents the database of natural resources in many regions of Brazil. It is an Open Source tool that allows configuration and therefore the proper use with the production needs of spatial information. Also, in this context, the Federal University of Santa Maria, has a research group that develops geo-based programming solutions and integration of Open Source tools. For this work we used one of the three geographic blocks with approximately 1,500 km2 of a total of 6,000 km2, being monitored use and land cover for the years 2012, 2013 and 2014. The choice of these areas aimed to test the potential of integration of Open Source tools in the production and analysis of spatial information of forest fragments. The methodology of the study consisted of the following steps: a) thematic mapping of forest fragments using sensor images REIS, RapidEye satellite in GIS environment SPRING System (Georeferenced Information Processing) produced by the National Institute for Space Research of Brazil, b) integration of Tools Python (programming language), R, GoogleEarth, and I3Geo QuantumGIS, for the production of spatial analysis and c) production of reports, charts and graphs for the interpretation and spatial analysis. The results of the integration of Open Source tools, it can be stated that the analyzes produced new information spatialized statistically characterizing forest fragments in the area chosen. We conclude that the integration of Open Source software's possible to develop complex spatial analyzes of great value in decision-making. The software's used were effective in the qualification, quantification, analysis and availability of spatial information in a web environment.

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