

FIG

FIG WORKING WEEK 2017

Helsinki Finland

29 May - 2 June 2017

Presented at the FIG Working Week 2017,
May 29 - June 2, 2017 in Helsinki, Finland

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

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Some questions to answer:

1. How to integrate open source tools?
2. How to apply these tools to forest resources?
3. What information can we generate?



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1. INTRODUCTION

Characterization of the study area

- . Forest areas under intense pressure from productive sectors activities agricultural
- . Intensive tobacco crop production
- . Region characterized by small rural properties



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2. BACKGROUND

- . Open Source Tools for Integrated Production Information on Forest
- . Interpretation and classification of images



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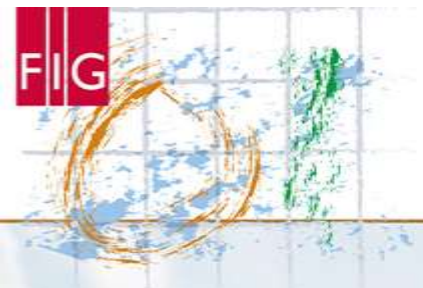


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3. METHODOLOGY

Open source tools - software used



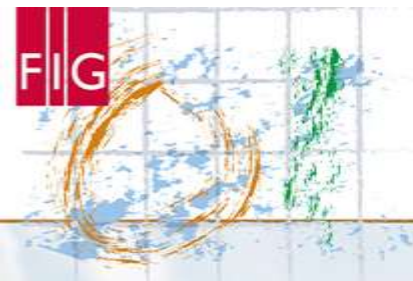


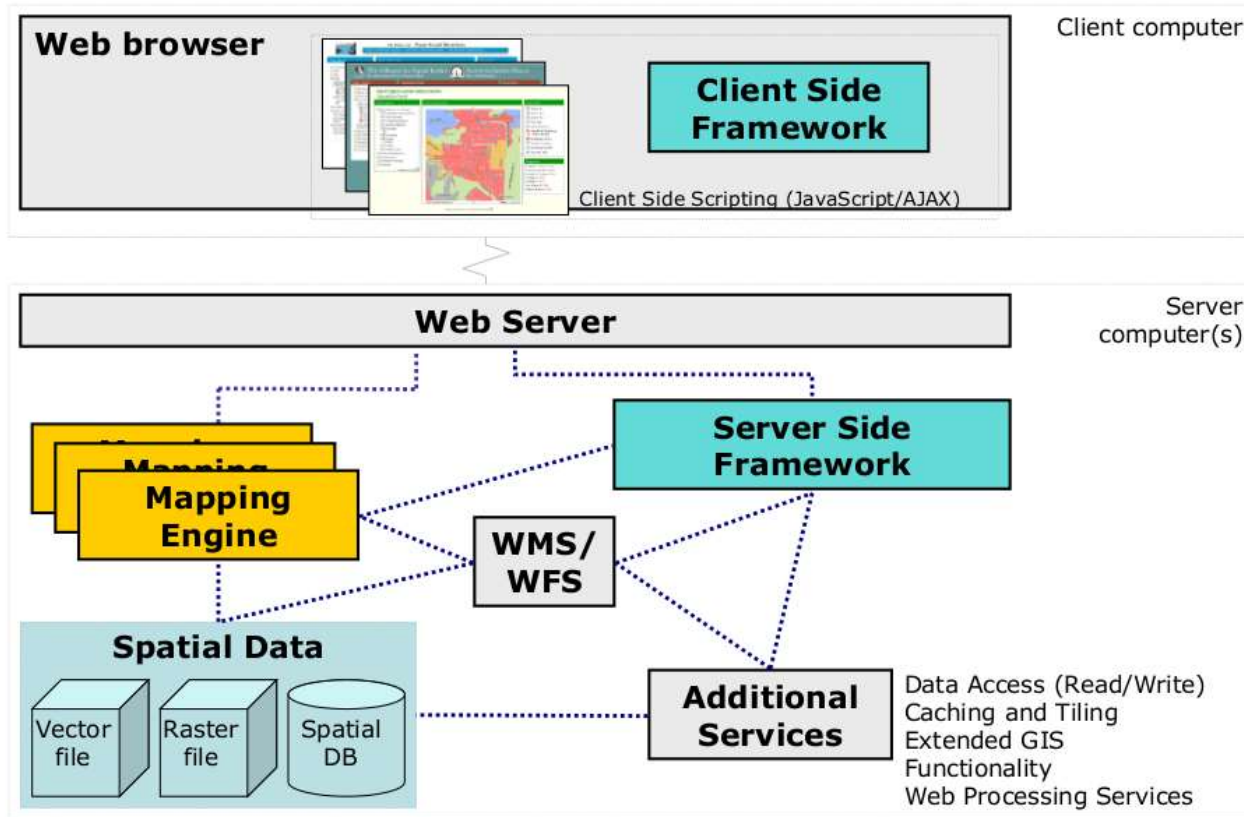
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Schematic View Interoperable Web GIS



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Data images processing

- > Preparing image data
- > Creation of a spatial database
- > Development of color composites
- > Contrast manipulation techniques



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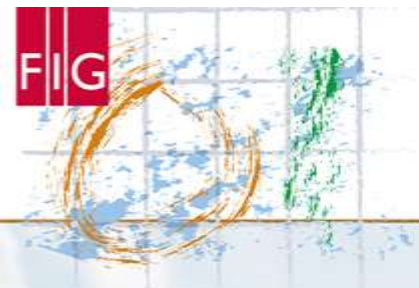


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Data images processing

- > Setting of the themes of use and land cover - album creation reference
- > Segmentation tests and classification of images
- > Preparing the mosaic of images
- > Development of thematic maps and availability of information on a Web GIS.



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4. RESULTS AND DISCUSSION

4.1 Images classification

- . Supervised classification technique, Bhattacharyya method
- . Land Use and Land cover: natural forest, Planted forest, bare soil, agriculture, country side, water and urban areas in 2011 and 2012



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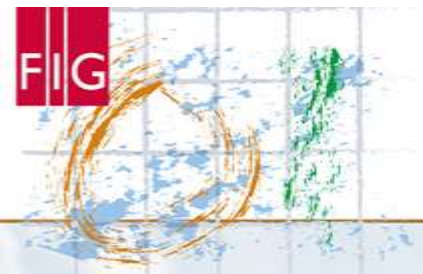


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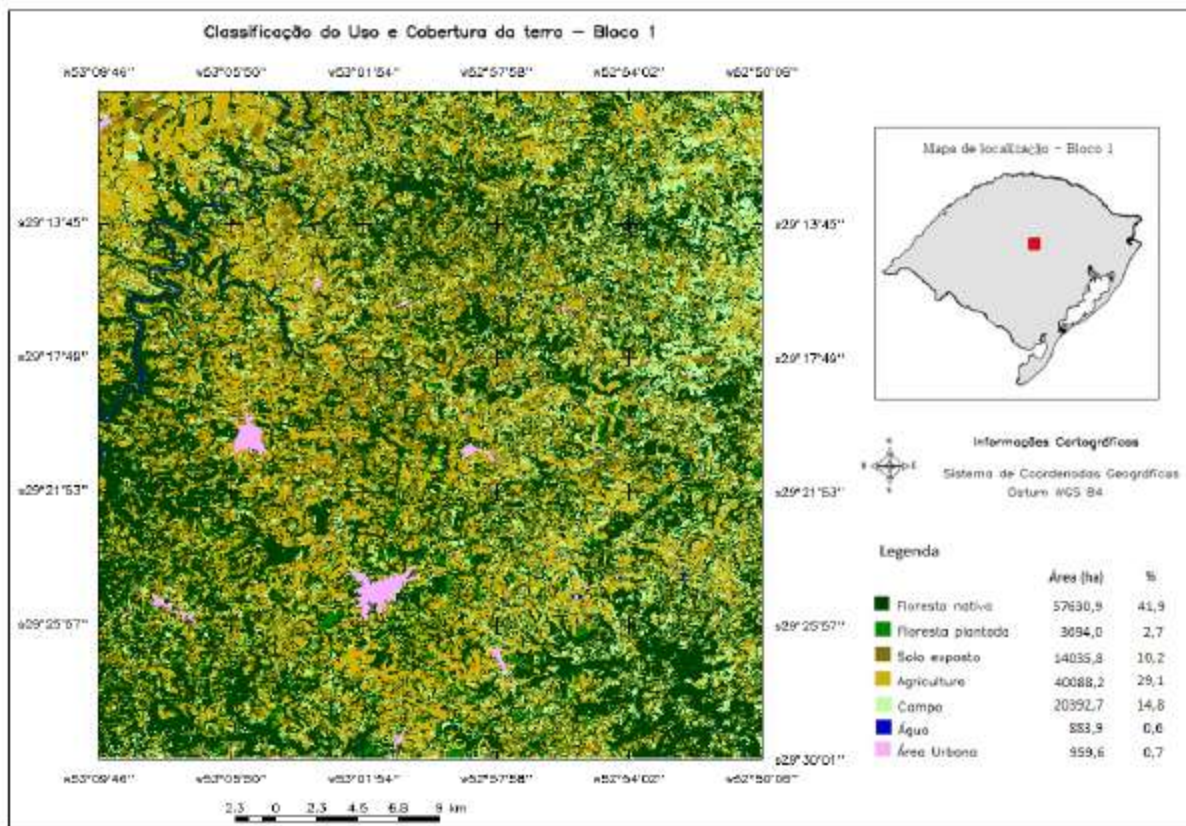


Figure 3 – Map of land cover and land use to the geographic block 1 in 2012.



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Table 1 - Quantification of the areas of Block 1 for the different land uses and periods.

Land use classes	2011 year	2012 year	Difference		
	Area (ha)	%	Area (ha)	%	Area (ha)
Native forest	49.943,70	36,28	57.630,90	41,86	7.687,20
Planted forest	4.724,90	3,43	3.693,99	2,68	-1.030,91
Bare soil	34.360,70	24,96	14.035,79	10,19	-20.324,91
Agriculture	24.772,30	17,99	40.088,15	29,12	15.315,85
Field	22.081,80	16,04	20.392,70	14,81	-1.689,10
Water	798,60	0,58	883,90	0,64	85,30
Urban area	959,60	0,70	959,60	0,70	0,00
Areas not classified	21,90	0,02	-	0,00	-
Total area Block 1	137.663,50	100,00	137.685,03	100,00	-



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Results for the transition map for the years 2011 and 2012

Kind of evolution	Area (ha)	%
Deforestation	7.440,60	5,41
Maintenance	42.495,00	30,88
Expansion	15.115,80	10,98
Others uses	71.609,00	52,03
Urban areas	959,60	0,70
Total area	137.620,00	100,00



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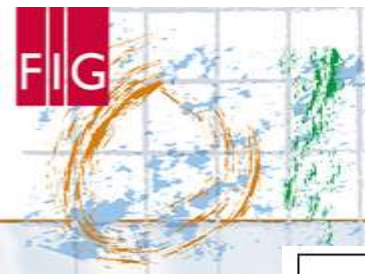


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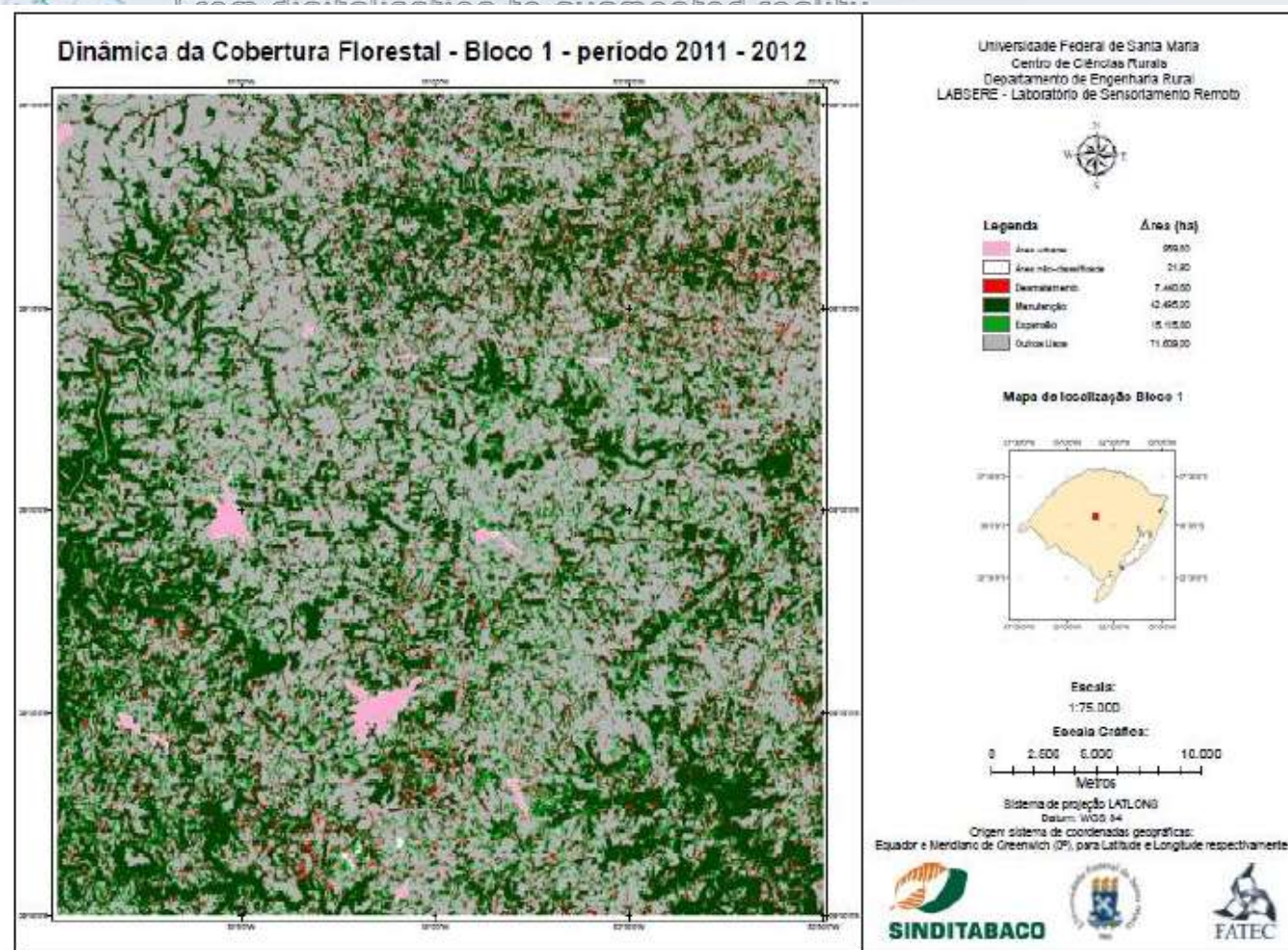


Figure 4 – Dynamic forest cover in Block 1 in 2011 and 2012 years.



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5. Conclusion

- It was possible to integrate different softwares because they have open source;
- The use of image processing made it possible to study the dynamics of land use and land cover;
- The information produced from areas of land use and land cover allowed us to know the dynamics of forest resources in the years 2011 and 2012.



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Thank you very much!



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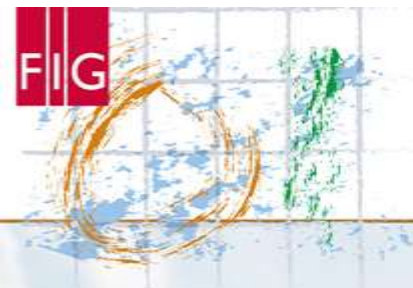


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