

## Synthesis Of Methods For The Generation Of Prognostic Scenarios Of Anthropic Expansion With Geoinformation Support

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**Abstract:** The use of geotechnologies and the proposal of geoinformation on the areas of anthropic control are diverse, especially a generation of prognostic scenarios. Thus, a conceptual review is needed on a series of prognostic scenarios and expansion models of areas of use to compile the information and understandings about the current scenario of the Brazilian publications volume of studied areas. That is, predict the future of publications based on past and present.

An important part of the development was between the generation of a scenario of prognosis and geography, showing the importance of geoinformation-supported planning to understand the changes of variables in the creation of a model that is linked to a current situation of authors and interests.

In practice, perform a survey on the prognostic models in urban areas using geotechnologies, at different scales of geographic analysis, quantify and qualify already consolidated inputs, methods and results. And, finally, to obtain a discussion about the application of models and to make prognostics and their importance for a Geography.

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### I. Introduction

Due to the constant changes in the urban environment, adequate management requires constant monitoring in order to guarantee the control of the interventions carried out on the environment. The search for tools that translate the behavior of the urban environment is an essential factor for the planning and execution of actions, monitoring of urban and social conditions, as well as evaluation of programs and projects. The proposition of future scenarios on the limits and direction of the new changes in the cities brings a perspective of support for decision making and territory management.

The environmental problems are related to the complex scenario of the general crisis and the absence of a policy regarding the planning of the use of natural resources, in which it has generated an irrational use with some irreversible losses, inducing important economic implications due to the environmental degradation. For example, in some cases, the flooding process of a certain region is natural, that is, it would happen with or without human intervention. The problem is that allotments and neighborhoods are often built in regions that make up areas at risk. In other words, in times of drought, houses are built in places that are part of the river beds, and when these rivers pass through the floods, they end up flooding these houses. Many of the urban environmental problems are directly linked to social problems. The segregated areas, the poorest places in the city, are often the scene of the consequences of human action on the natural environment. Problems with floods are routinely reported and the fault is not the rain. The formation of floods is linked to urban pollution or to infrastructure conditions, such as waterproofing of soils from the construction of paved streets. The water, which would normally infiltrate the soil, ends up having nowhere to go and flows into the rivers, which accumulate, overflow and cause flooding.

Using the available technologies, a conceptual review will be elaborated on the generation of prognostic scenarios and models for the expansion of anthropic areas and a survey on the prognostic models in urban areas using geotechnologies in different scales of geographic analysis, quantifying and qualifying inputs, methods and results already consolidated and at the same time making a parallel on the adoption of models and prognostic realization and its importance for Geography.

## II. Material And Methods

As an initial basis, a survey was carried out of concepts for aggregation of values, following the extraction of the data that were obtained in digital platforms, online libraries, university collections and civil institutes website linked to geosciences. After the collection of this raw data, they were organized and treated in tabular form for the generation of geographic information and the means of publication, inputs and software could be explored, and finally, the place of publication and study area.

### Model

The term "model" is used in several forms. It is used as a noun suggesting a representation, as an adjective suggesting a degree of perfection, or as a verb suggesting how it is something. A model should be fairly simple for manipulation and comprehension by users, quite representative in the full scope of implications for it to have, though quite complex to accurately represent the system being studied.

### Prognostic Scenario

Plot the probable future development or the result of a process in a set of visual elements that compose the space. The simulation of systems helps to understand the factors that induce the development of a phenomenon, as well as to represent different scenarios of future possibilities, according to different socioeconomic, political and environmental frameworks. Adopting as a basic concept an internationally accepted vision such as that of Michael Porter (1986), a scenario is an internally consistent view of what the future may be, and its main functions are: The explicit evaluation of planning premises; Support for the formulation of objectives and strategies; Evaluation of alternatives; Stimulus to creativity; Homogenization of languages and Preparation to face discontinuities.

### Anthropic Expansion

Growth related to man-made changes to the environment. The landscape presents itself as the material result of the junction between the natural environment and the anthropic environment. Landscape transformations occur at distinct temporal scales, whose modeling agents vary in importance depending on the scale. The temporal scales in the study of the landscape include: long, medium and short term. (Bertrand, 1972; Boles, 1981 and 1992; Ingegnoli, 2002; Rodriguez et al., 2004, Tricart, 1976). It is understood that natural landscapes are modified and transformed both in form, function and structure by man over time. (Lang and Blaschke, 2009).

### Geoinformation

Geographic information or geospatial information, all information that can be spatialized near Earth, that is, it has some kind of geographical link that allows its location. This can be a point, an address, a territory, among others. Geographical information is generally created by the manipulation of geographic data in a computer system called the Geographic Information System (GIS). Geographic data are data that describe phenomena located spatially on the earth's surface. They have three fundamental characteristics: Spatial: that informs the geographical position of the phenomenon and its geometry. Non-spatial: attributes that describe the phenomenon. Temporal: that inform the time of validity of the geographic data and its variations on the time. (Borges, 1997)

## III. Result

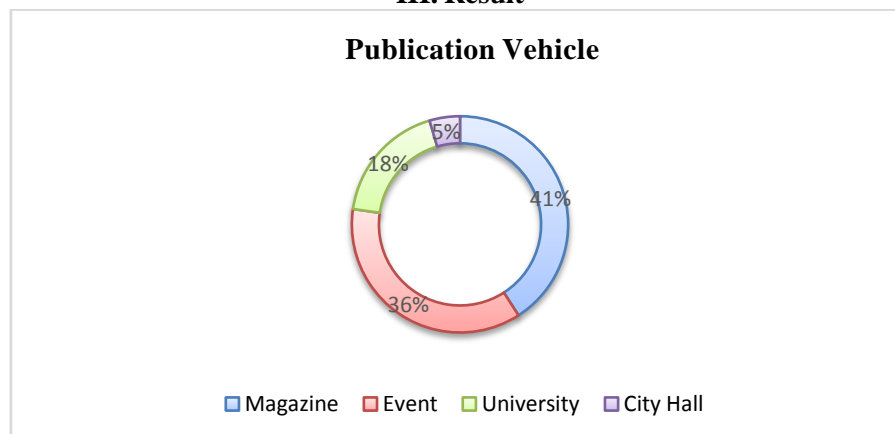
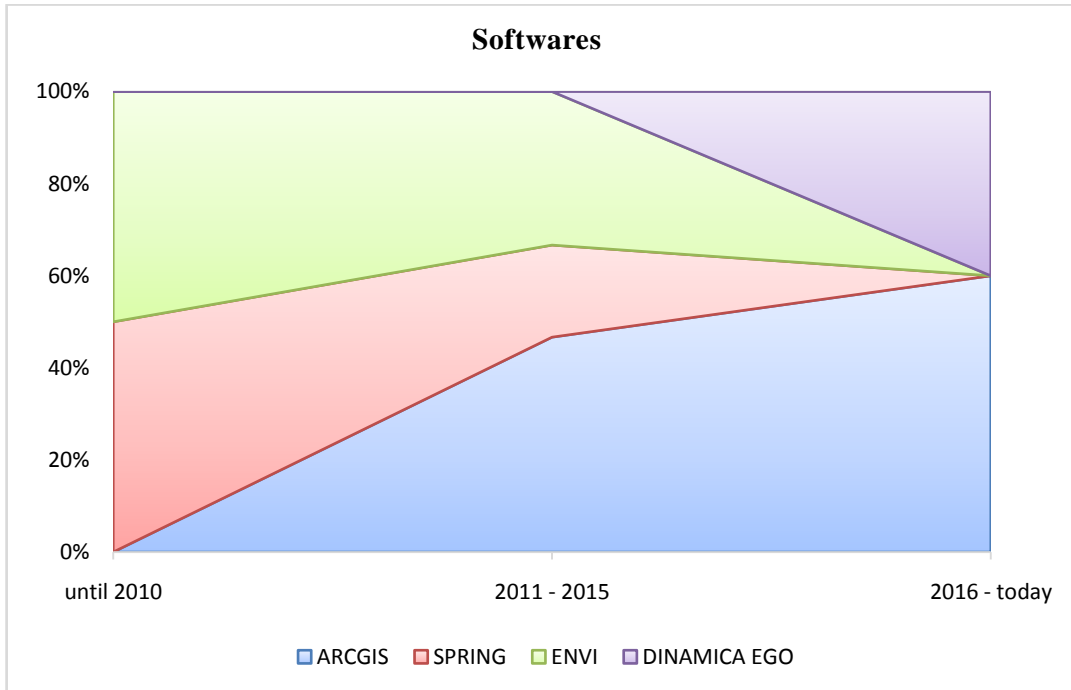
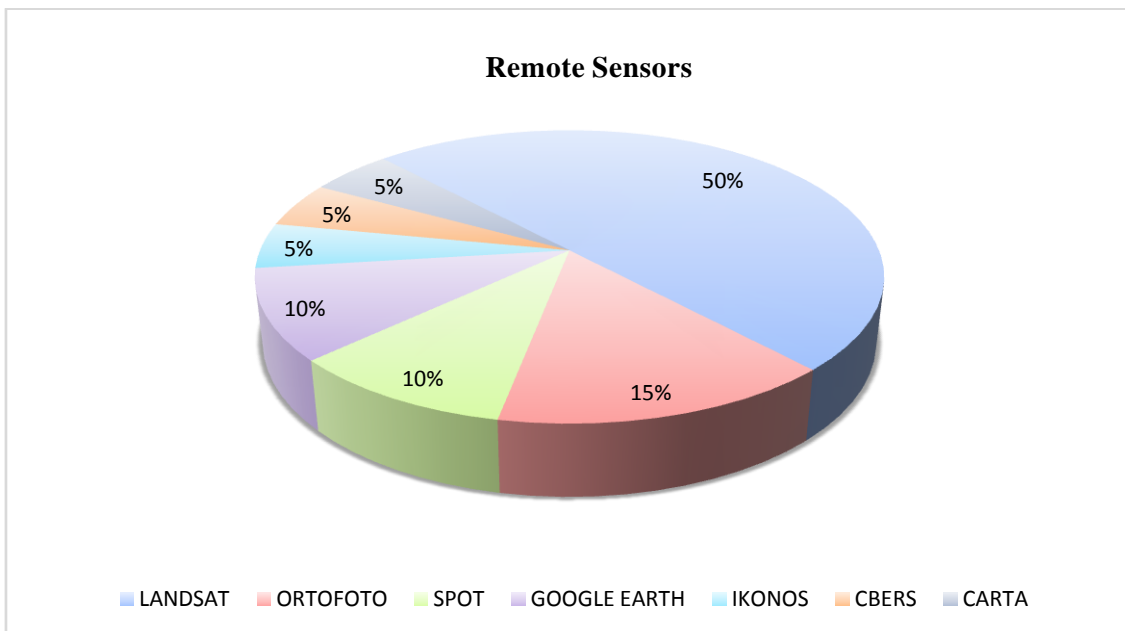


Image no1:Types of vehicles used for publications.



**Image no2:** Types of software used for publications.



**Image no3:** Types of remote sensors used for publications.

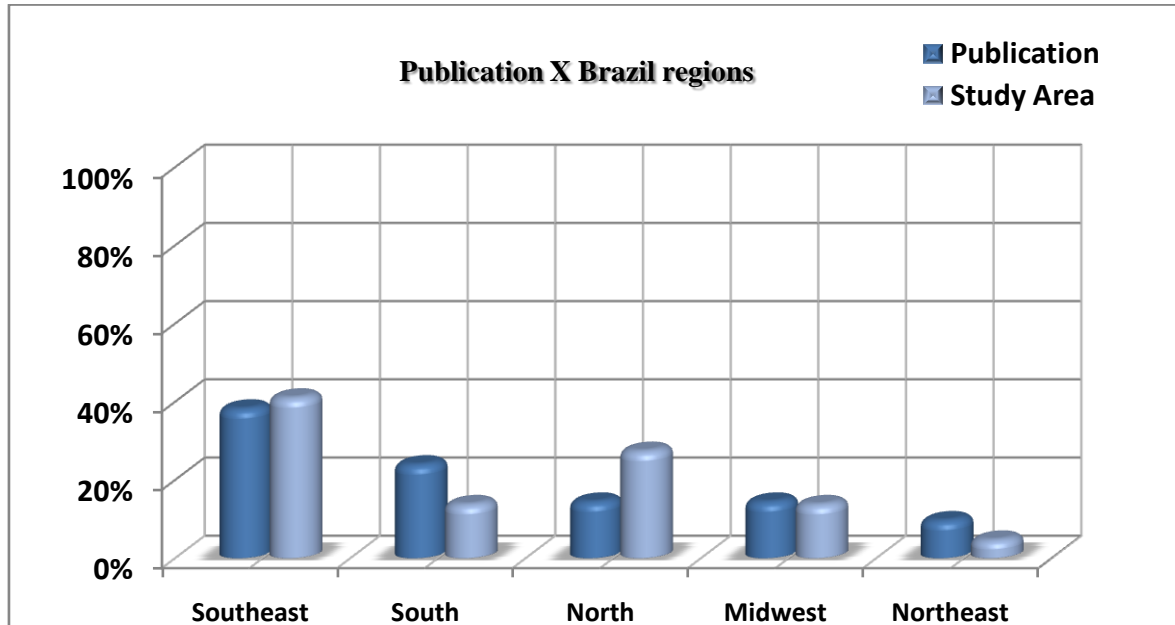


Image no4: Comparing the volume of publications by Brazil regions.

#### IV. Conclusion

For the generation of prognostic scenarios of the anthropic expansion, it requires the communion of knowledge of the environmental and social areas, in addition to computational deepening in what concerns the programming.

Thus, this analysis allowed to deepen the knowledge about the modeling methods in the construction of scenarios as a tool to support geosciences. As results can be identified: Few publication initiatives and areas studied in the Northeast Region; Southeast Region being a record of publications and areas studied; Very little initiative of city halls; Software exchange over time; Images of LANDSAT in the oldest and current works; The North Region, despite not having many publications, is one of the most studied Regions; More publications in journals from time to time; Importance in Geography being a factor of planning, for making decisions and solutions for the future.

#### References

- [1]. Modelos Integrados em Geografia. CHORLEY, Richard; HAGGETT, Peter.
- [2]. ANPPAS. <http://www.anppas.org.br/novosite/index.php>
- [3]. INPE. <http://www.inpe.br/>
- [4]. MMA. <http://www.mma.gov.br/>
- [5]. IBEAS. <http://www.ibeas.org.br/>

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