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A Land Resource Database for Land Evaluation Modelling in the Tocuyo River Basin, Venezuela

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Abstract

Tocuyo River Basin is the most important hydrographical ecosystem in the Center-Western region of Venezuela. Population growth and urban expansion in the basin have caused a degradation of natural resources, an increase of soil erosion risk, and a relative land scarcity for agricultural uses, therefore land evaluation to optimise the land use is necessary.

Land evaluation involves the assessment of land performance used for a specific purpose, involving the execution and interpretation of surveys and studies, of all aspects of land to identify and make a comparison of promising kinds of land use applicable to the objectives of the evaluation. It is, therefore, necessary to obtain, analyse and interpret detailed information of all factors that interact with the land to proposing an integral management of this basin.

In this study a methodology has been established, integrating remotely sensed imagery from Landsat-7, ETM+ (WRS⁻², P/R: 6/53), digital elevation model (SRTM), 1:100.000 scale topographic and thematic maps, ground survey methods, and digital data in a geographic information system (GIS). A new cadastre based on a GIS with information about land forms, geology, hydrology, vegetation, soils, climate, infrastructure land cover, land use changes is developed to have a database in digital format for a detailed survey of the study area.

The resulting information especially that related with land use/land cover patterns and their spatial distribution is a prerequisite for planning sustainable development of the region. It can be successfully used in land use/land cover change detection analysis, determination of soils erosion risk, and identification of land units for land evaluation. These objectives are underway.

Keywords: Land evaluation, land resources database, Tocuyo river basin, Venezuela.