



Industrial and urban use suitability map for a sustainable land-use management in a covered karst area in the central Ebro Basin (Spain).

M.T. Lamelas (1,2), O. Marinoni (1), A. Hoppe (1), J. de la Riva (2)

(1) Institut für Angewandte Geowissenschaften, Technische Universität Darmstadt, Darmstadt, Germany, (2) Dep. Geografía y Ordenación del Territorio, Facultad de Filosofía y Letras, Universidad de Zaragoza, Zaragoza, Spain, (tlamelas@unizar.es / Phone: +34-976761000 ext.3909)

The city of Zaragoza is located in a covered karst area, with intense karstification processes, where the fluvial terraces and glacia deposited above the Tertiary gypsum formation form an unconfined alluvial aquifer. The existence of groundwater, the proximity to the river and its strategic position in the middle of three dynamic economic axes within the Iberian Peninsula caused a fast industrial and urban development during the last decades. Due to the fast urban development negative interactions with the geosphere have been largely ignored. This resulted in the destruction of many infrastructures caused by land subsidence, a misuse of valuable agricultural land, the destruction of several valuable natural areas and an increasing aquifer contamination.

In the last years, the development of Spatial Decision Support Systems (SDSS) has made considerable efforts. These systems combine the benefits of spatial analysis provided by a Geographic Information System (GIS) and decision support methodologies taking into account a variety of criteria and objectives. SDSS have therefore become an important tool to support the sustainable development of urban areas. In this contribution, industrial and urban suitability maps are created with the use of the Analytical Hierarchy Process integrated in ArcGIS. A variety of geoscientific criteria are introduced in the evaluation process like dolines susceptibility, groundwater vulnerability, valuable natural areas protection, agricultural capability of the soils and more.