



## **Mapping and Monitoring of urban growth using remote sensing imagery analysis: the case of Chania, Crete**

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Urbanization is an anthropogenic phenomenon that has been recognized as a threat to human health, to social relations, to climate, to natural environment and to economy. Urban development has profound effects on biodiversity and ecosystem functioning at local, regional, and global scales. Thus, being able to map the urban areas and monitor urbanisation trend is of highly importance to both scientists and policy makers.

Traditional methods for urbanisation mapping based on gathering demographic data, censuses and maps using samples are impractical and unsatisfactory for urban management purposes. However, remote sensing and Geographic Information Systems (GIS) can help to solve these problems by providing up-to-date spatial information. The present study aims to study the urban expansion of the city of Chania and the wider area around it, for a period of 20 years based on multispectral remote sensing imagery analysis. Chania is located in the island of Crete in Greece and the second on population city of the island. Crete is a great tourist destination with special natural landscape and large agricultural production.

Urban expansion mapping for the study site has been based on a time series analysis of Landsat TM images and a GIS built up to facilitate an efficient data analysis. The use of image classification applied to the TM observations for mapping urban growth is examined. As a means of accuracy assessment, the resulting land cover estimates were compared with independent estimates obtained from the visual interpretation of digital orthophotography of the Landsat TM images. An attempt is also made to relate results from this study to any relevant for the study area significant social, economic, political, scientific, natural phenomena and events.

**KEYWORDS:** urbanisation, urban growth, Landat TM, image classification, Crete, Greece