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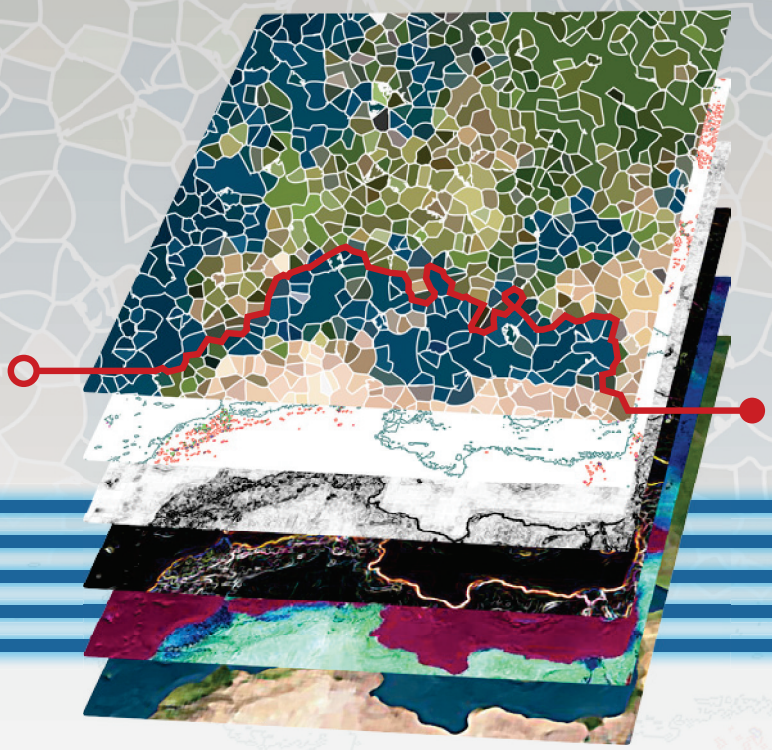

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HELLENIC REPUBLIC
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CITY OF THESSALONIKI

ISSN: 2241-1224

Aristotle University of Thessaloniki, Greece

open source journal

e-Journal

South-Eastern European Journal of Earth Observation and Geomatics

Vo3 No2S
May 2014

GEOBIA 2014 Advancements, trends and challenges, 5th Geographic Object-Based Image Analysis Conference, Thessaloniki, Greece, May 21-24, 2014

Guest Editors:
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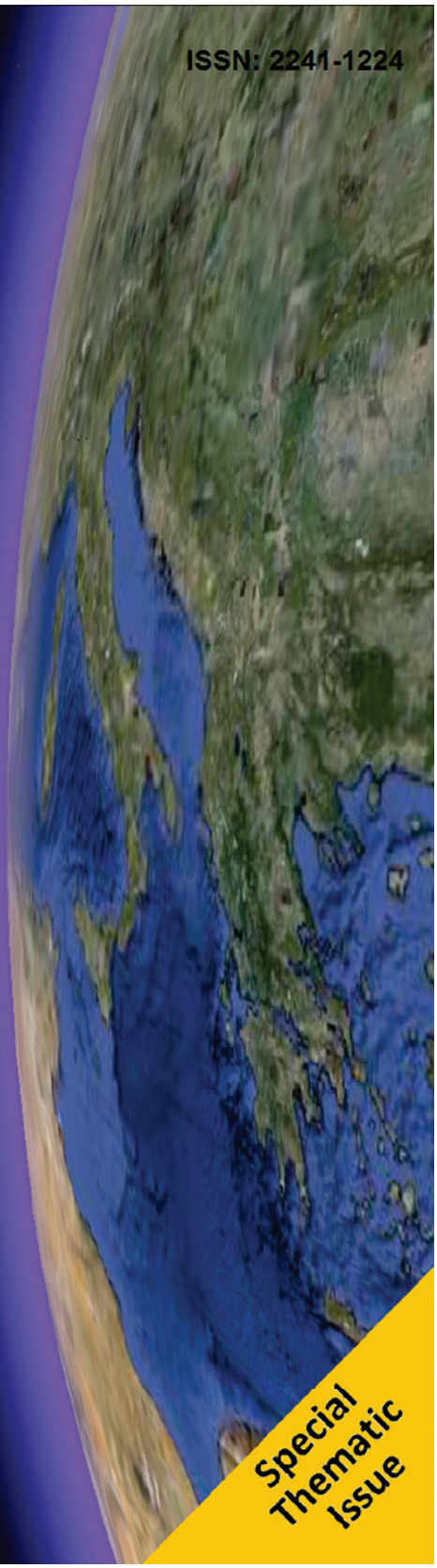
Petros Patias
Dimitris Stathakis
Georgios Zalidis



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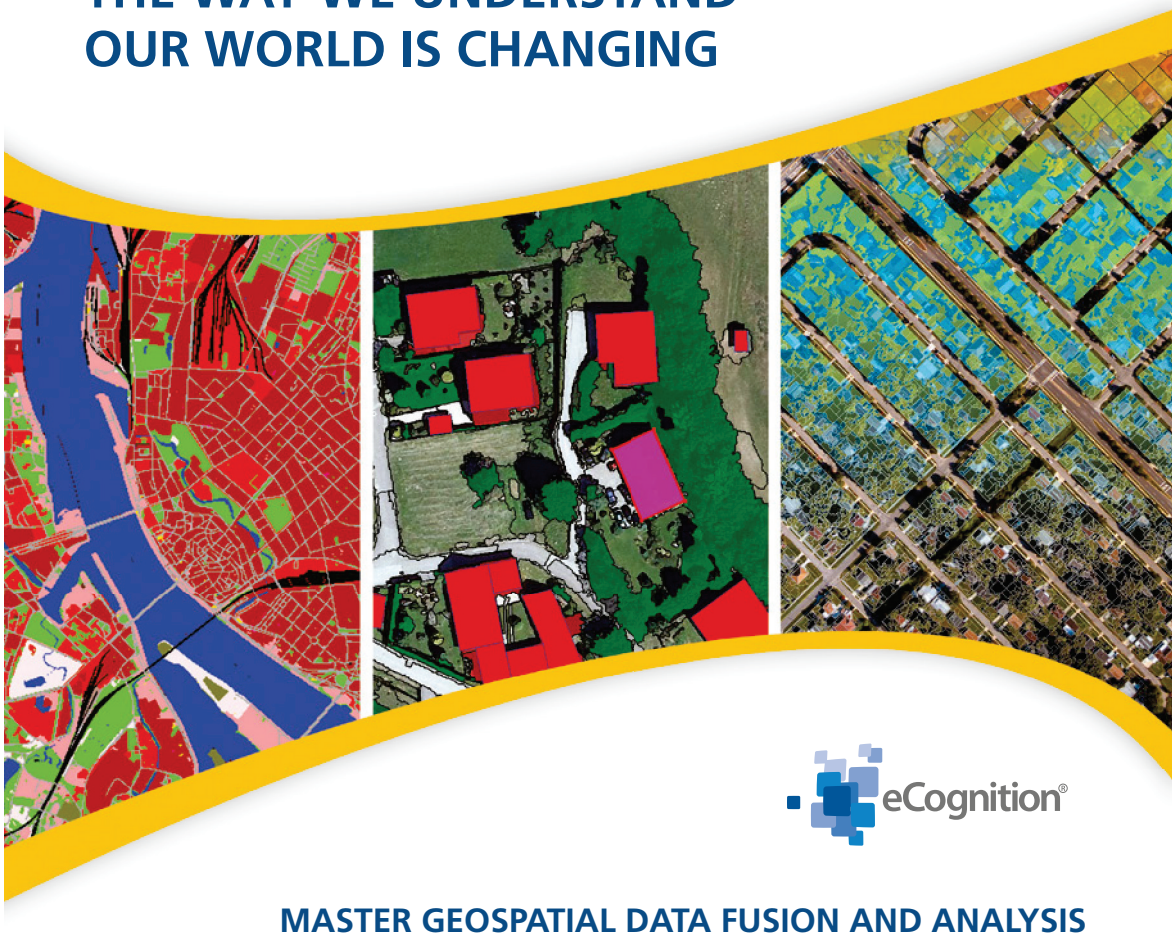

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O.T9 - 085

DATA MINING AND OBJECT BASED IMAGE ANALYSIS APPLIED TO SOYBEAN AREAS CLASSIFICATION THROUGH TIME-SERIES TM/ETM + IMAGES

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KEYWORDS: Multiresolution segmentation, J48, agricultural statistics, soybean cultures

This study was conducted in order to map soybean plantations through the use of temporal series of ETM + / Landsat-7, together with the approach Object Based Image Analysis (OBIA) and Data Mining (DM). This approach allowed using the knowledge about the characteristics of Soybean cycle in the classification process. The study area corresponds to three cities in the state of São Paulo, namely: Guara, Ipuã and San Joaquin Barra. To generate image objects was used the Multiresolution Segmentation algorithm, implemented on the E-cognition platform. The knowledge model was obtained from the J48 algorithm, which generated a decision tree and was implemented in the WEKA platform. The training set used to generate the decision tree corresponds to the areas identified in Soybean growth stages on the following dates: September and October (2000); February and March (2001). After obtaining the knowledge model a thematic map of soybean was generated through the Hierarchical Classification Algorithm in E-cognition platform. The map had overall accuracy and kappa coefficient equal to 98.69% and 0.97, respectively. The results show that the classification of soybeans areas, performed through the application of the approach DM + OBIA in temporal series of TM / ETM +, can be considered efficient, and it is a promising alternative to the process of agricultural monitoring.