SUGRES - SERVICES FOR URBAN GREEN MONITORING USING REMOTE SENSING[1]

by Ir. Tom Op 't Eyndt[*] & Prof. Eléonore Wolff[**]

[*] G.I.M. – Geographic Information Management nv
[**] Université Libre Bruxelles

ABSTRACT

Most municipalities have similar questions about urban green management problems. How many trees are existing in this or that neighbourhood? What fraction of the municipality's territory can be evaluated as being a green surface? Where are the sick trees standing that should receive thorough field examination? Did my municipality become more green or did it became more grey during the previous years? These questions are only a small subset of policy and management issues municipalities are confronted with today.

Enormous investments in manpower and costs are required to answer these questions by executing field surveys. However, with the application of earth observation techniques, these efforts can be reduced to a large extent. And time and costs can be saved.

During the SUGRES project, the private and scientific sector in co-operation with several governmental organisations collaborated to demonstrate the possibilities of earth observation in the urban green management field. The cities of Brussels and Ghent were taken as case-studies.

During the project several geo-information products were developed. One product is an inventory of urban green areas, which is in a data set that contains all green elements present in the urban environment. This inventory includes both public and private green but does not give a division of urban green elements into more detailed thematic classes. The presentation gives an overview of the methodologies that are applied to generate this product.

A second product is a classification of life forms. This geo-information product refines the urban green inventory and groups green elements is more detailed thematic classes as shrubs, grass fields, forests and gardens. A third product focuses on the assessment of tree health. It proved not to be possible to generate the anticipated product in an automated way. However, useful information can still be retrieved via visual interpretation which can support the field work of a surveyor.

A fourth product focuses on detecting vegetation changes via multi-temporal analysis. This activity resulted in a change product which indicates locations were green areas did change into 'grey' surfaces and locations which became green, i.e. were new green areas were created. This analysis has been performed via object-oriented image processing techniques which proved to be very powerful for this kind of analysis. The results will be presented.

As a follow-up to this project, several efforts are currently undertaken to market the generated products and expertise.