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Evaluation of Possible Cartographic and Remote Sensing Methods for Detecting Temporal Changes in the Urban Area in the Alpine Region

Background

The current work is the part if the WUI (Wildland Urban Interface) project. The main aim of the project is to develope a WUI model for alpine region to implement fuel management programms for controlling the fire ignitions. The project now is at the second phase, where are processing more detailed investigations in order to access better characteristics of the spatial and temporal evolution. This current work is directed to the evaluation of cartographic and remote sensing methods, which can detect temporal changes. The case study area is mostly situated in the Gorduno municipality , in Canton Ticino, where the main part of the territory is situated in alpine region and 7% belongs to the urban zone.

Methodology

In the master project were used two main approaches of analysis: Cartographic and Remote Sensing. The input data were: Landsat TM images (09.07.1990 and 05.07.2003), resolution 30m; swisstopo topographic map, scale 1:50 000. Main steps of the methodology are represented in the Figure 1.
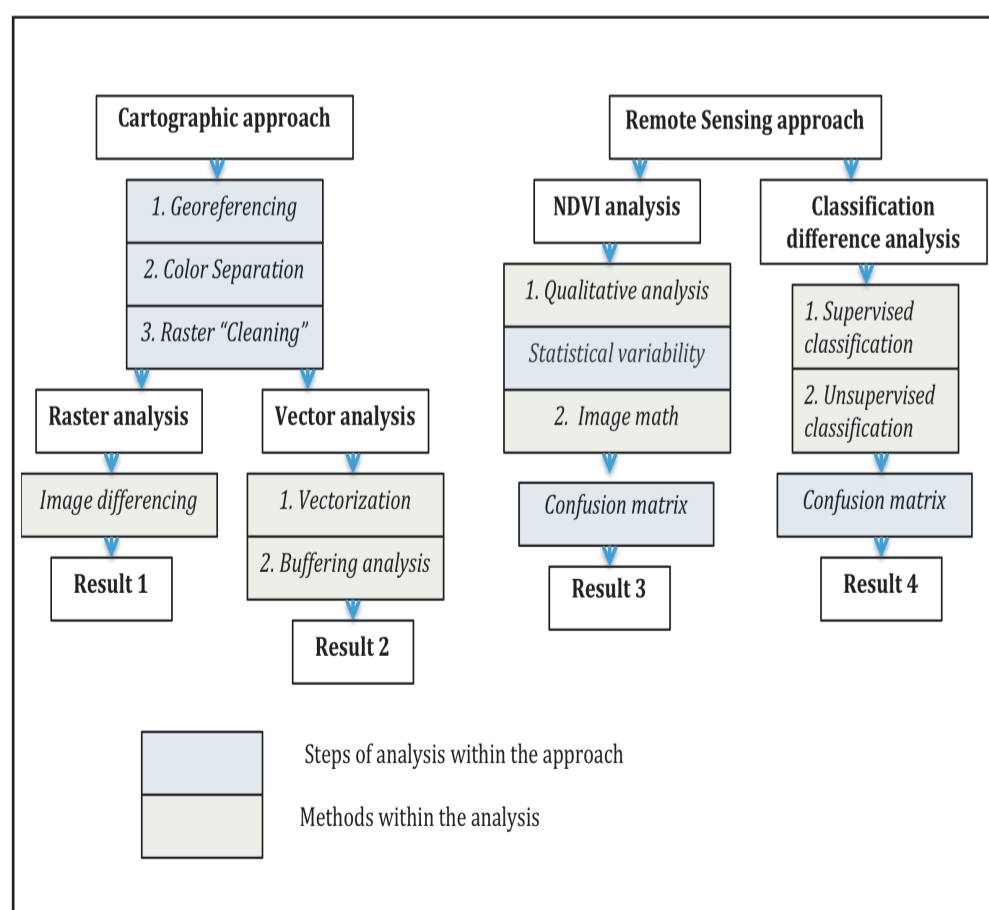

Figure 1. Representation of the methodology

Results of approaches

Cartographic Approach
• requires a lot of manual work
• evaluates the main distances, where the new buildings have been built
• allows to distinguish the zones of the buildings, which are not existing anymore
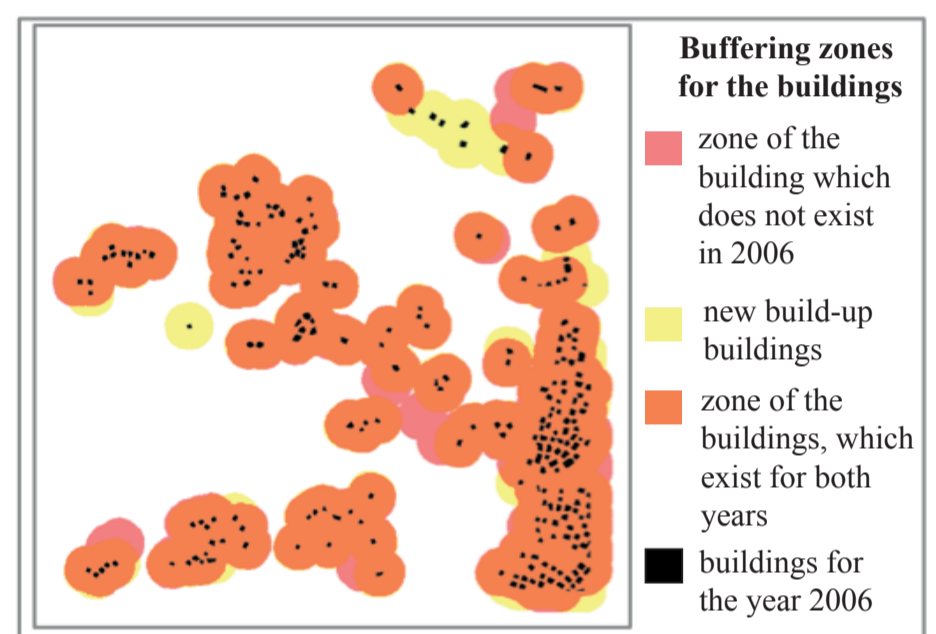• ability of further analysis

Figure 2. Visualisation of Vector Analysis

Remote Sesning Approach
• gives fast qualitative analysis
• gives an opportunity to distinguish changes in build-up area
• possibile to obtain statistical information
• useful for big areas
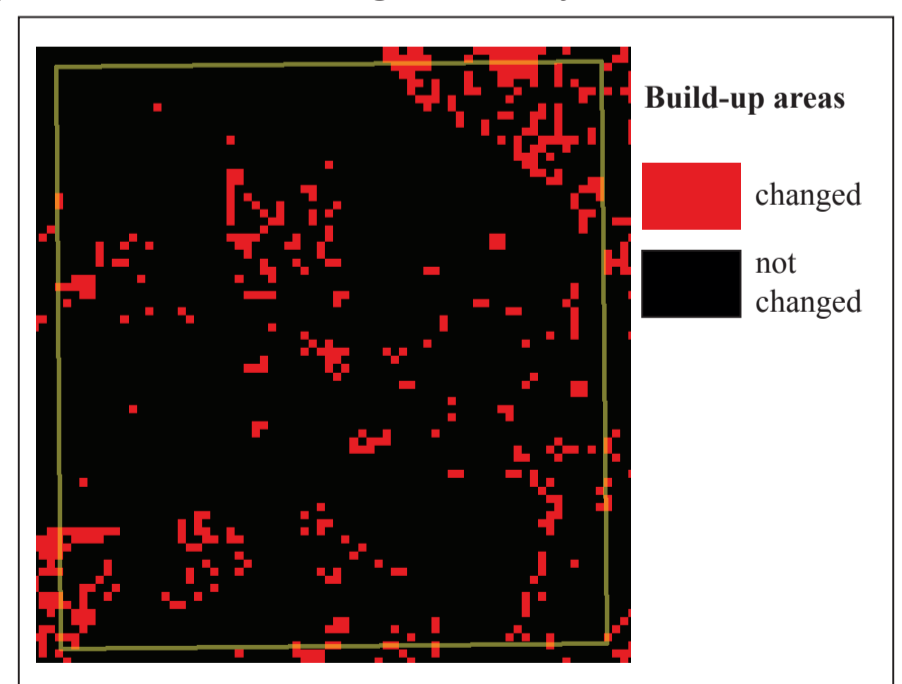• possible to achieve high accuracy results

Figure 3. Visualisation of Classification Difference Analysis for the study area

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