

# The grünOase project: An integrated analysis and assessment of green city oases

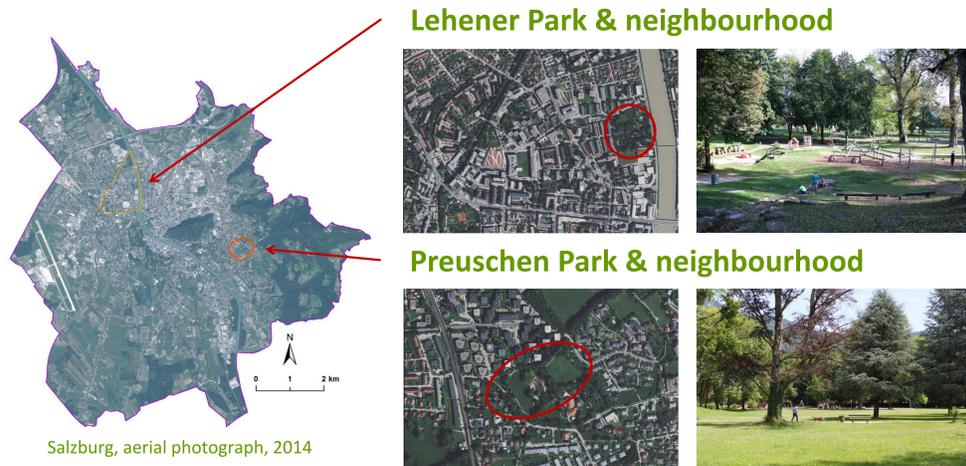
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## Introduction

Green city oases such as city parks provide various ecological, social, economic and aesthetical benefits for citizens and thereby support human well-being. However, population growth, economic factors and climate change put urban green under pressure. At the same time urban green spaces become more important since the number of people that use green spaces, e.g. for recreation, is increasing. Landscape architects and urban planners face the challenge to address this issue and to deal with the diversity of different planning requirements.

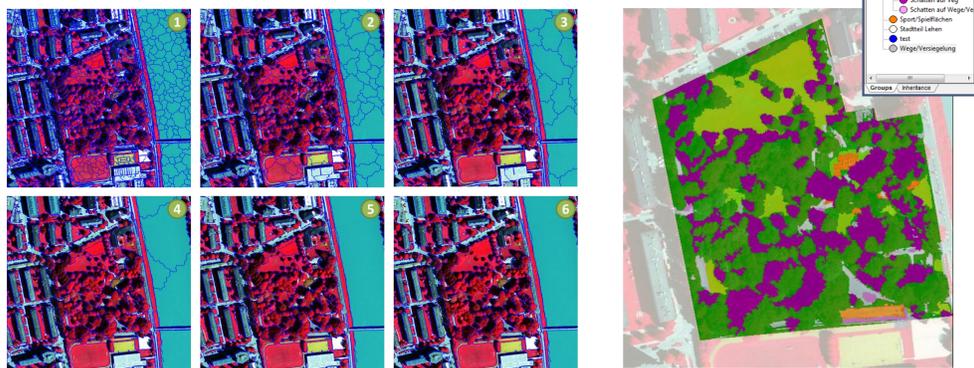
The grünOase (Integrated Analysis and Assessment of Green City Oases) project aims to develop a concept – including a practical guideline – that integrates quantitative and qualitative information on urban green in city parks. We propose an integrated assessment of objective information on green structures derived from very high resolution remote sensing data combined with of citizens' perception of urban green obtained through an in-situ questionnaire survey. Ideally, the integrated urban green assessment and the resulting guidelines will assist city planners and decision makers in the sustainable planning and management of urban green infrastructures.



## Quantitative information from Earth Observation

### Object-based image analysis (OBIA)

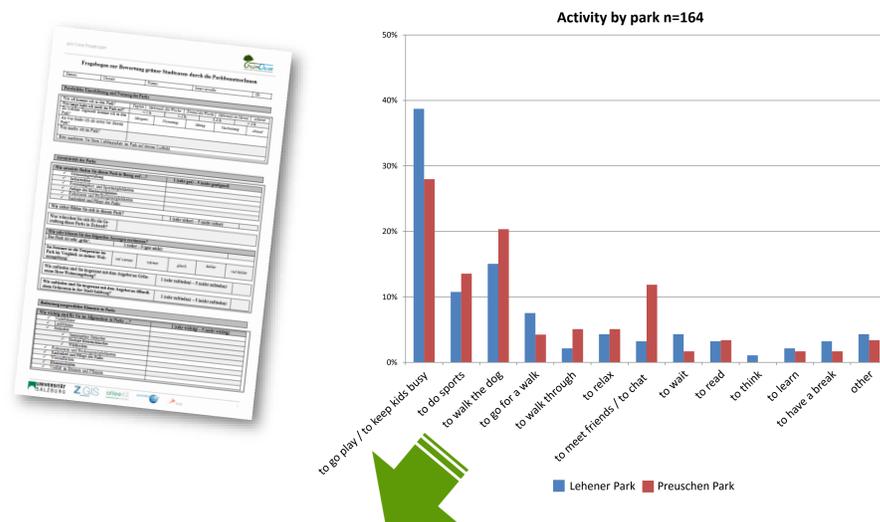
- Semi-automated method combining remote sensing and GIS functionalities
- Use of spectral, spatial, textural and contextual properties of image objects
- Differentiation of various green structures



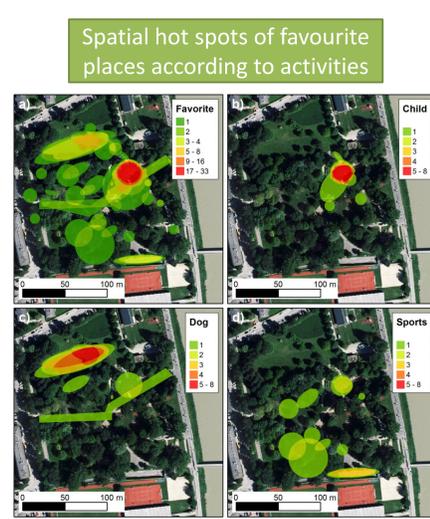
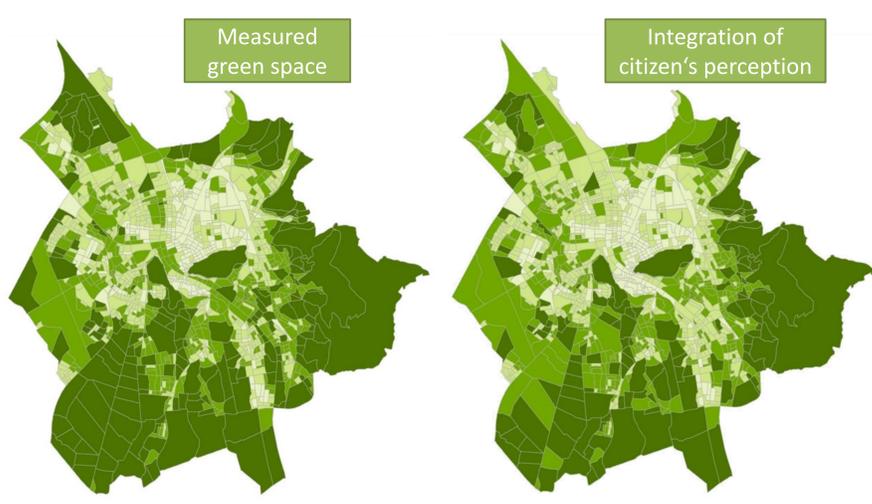
## Qualitative information from in-situ collection with surveys

### Interviews with park visitors

- Interviews according to a questionnaire, with 164 citizens in both study areas
- Collected information addressed (1) motives for visiting, (2) attractiveness of park, (3) accessibility of park, (4) importance of urban green structures as perceived by the citizen
- Descriptive statistical analysis and identification of perceived value of urban green structures



## Integrated assessment of urban green



- ### Mapping urban green value by park visitors' perception
- Spatial distribution of urban green structures is weighted by perception of park visitors
  - It enables localization of hotspots for action
  - Lower shares of urban green can be compensated by increasing urban green structures with high value
  - Remaining challenge: transfer findings from city scale to the scale of districts and parks

## User Workshop

The concept and the initial results were discussed in a user workshop with representatives from the Salzburg city's departments for Municipal Gardening, for Urban Planning and other stakeholders. The participants confirmed the value of the integrated approach of information collection for park planning. Further discussion identified new opportunities for the investigated parks and surrounding neighborhoods.



## Discussion & Conclusion

The analysis of visitors' perception of urban green structures combined with Earth-Observation-based mapping indicates hot spots of urban green space attractiveness. Forthcoming analyses are expected to reveal a strong spatial agreement between specific green and recreational structures, identified via OBIA, and visitors' favourite places. The inclusion of citizens' perception in the planning process should help to make expert planning decisions more acceptable among the public. These tested approach can be included in a guidance document for improved planning of urban green spaces.