FIXED OR FLEXIBLE LAND COVER CLASSIFICATION FOR THE ANALYSIS OF LANDSCAPE FUNCTIONALITY?

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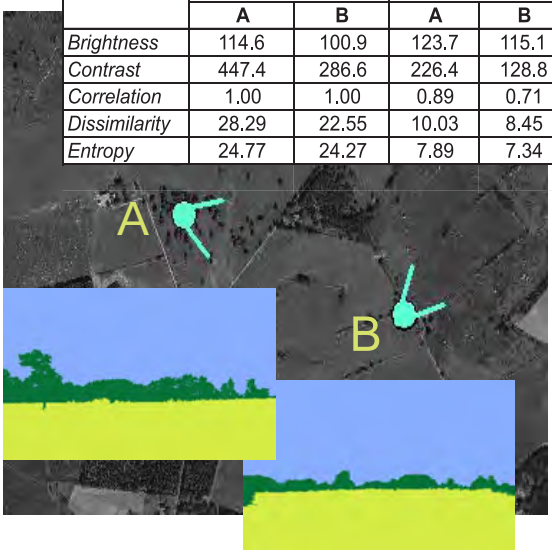
INTRODUCTION: In recent years, a demand for comparison across space and time has driven efforts for harmonising and linking different land cover classification methods (e.g. CORINE, LCCS) [1]. This provides a basis for analysing land cover change and its impact on landscape functions. The popularity of land cover maps for monitoring is its use of easily accessible remote sensing data. Land cover maps provide a spatial link to multiple functions in the landscape, offering means to spatially allocate different functions [2]. However, spatial representation of these functions often requires different types of classification. These classifications together, through a logical overlay, could provide useful information for planning and management of multifunctional landscapes.

CLASSIFICATION IS DEPENDENT ON FUNCTIONS AND USERS

Which photo do you think best describes pasture?

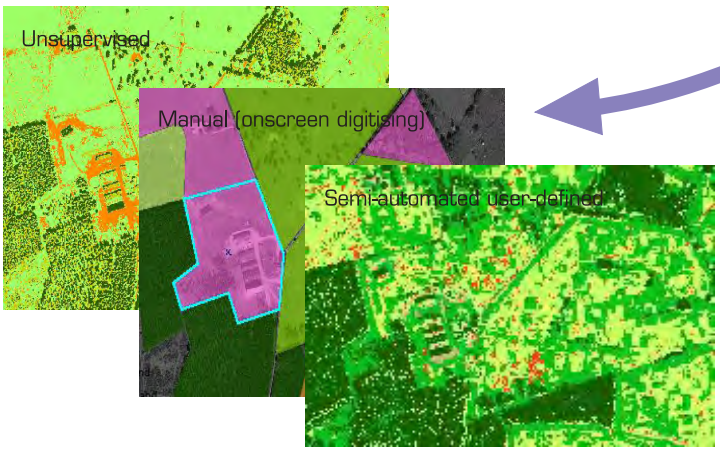
Cognitive aspects of land cover: Classification of landscape is dependent on purpose. People's conceptualisation and classification depends on their cultural context and knowledge and might differ from established classification [3]. This project aims to capture people's classification of landscape through different types of surveys.

	Terrestrial		Aerial	
	A	B	A	B
Brightness	114.6	100.9	123.7	115.1
Contrast	447.4	286.6	226.4	128.8
Correlation	1.00	1.00	0.89	0.71
Dissimilarity	28.29	22.55	10.03	8.45
Entropy	24.77	24.27	7.89	7.34



LINKING QUALITATIVE LANDSCAPE INFORMATION AND QUANTITATIVE TEXTURE ANALYSIS

Photo interpretation: through image analysis of both terrestrial and aerial photos we aim to establish a link between the individual qualitative perception of landscape change and more cost effective quantitative methods of monitoring change.



SEMI AUTOMATIC USER-DEFINED CLASSIFICATION

Automated User-Defined Classification: For user identified land classes training data are created. The expert systems (neural networks, Bayesian statistics, fuzzy classification and decision trees) are trained individually [4]. For each combination of expert system type, data type and land cover class an expert is trained and the responses pooled using an evidence integration expert in the form of a multilayer perceptron.

DISCUSSION: Landscape often has different roles for different functions, implying that users with different objectives could benefit from their own land classifications. By integrating qualitative and quantitative landscape measurements we are able to identify which monitoring methods capture the variation in people's perception of landscape and observed landscape change. The automated user-defined classification improves the speed of mapping for user-relevant and functional maps. The presented data processing framework facilitates the quantification of both user perception and landscape functionality, and improves our ability to create and compare user-defined maps between different locations.

References: [1] Brown et al, 2002. Mapping of land use classes within the CORINE Land Cover Map of Great Brittain, Cartographic Journal 39(1) [2] Brandt & Vejre, 2004. Multifunctional landscapes; motives, concepts and perspectives. In: Brandt, J. & Vejre, H. (eds.) Multifunctional landscapes. Wit Press, Southampton; [3] Neisser, 1976. Cognition and reality. WH Freeman and Company; [4] Aitkenhead, M. & Aalders, I. In press. Classification of Landsat Thematic Mapper imagery for land cover using neural networks. International Journal of Remote Sensing.

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