



# Digital transdisciplinary in the landscape sciences - Integrating multiple types of digital data in studies of landscape change

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## Summary

The ongoing development of digital geo-referred data opens up new opportunities for interlinking different forms of contemporary and historical data in landscape change studies. This symposium focuses on the potential of the array of new digital data sources to advance the field of landscape ecology. We welcome presentations with an integrative approach to the use of digital data in relation to analyses of landscape change, such as method development, empirical analyses or theory formulated on the basis of multiple data sources as well as integrative digital communication of such studies.

## Description

A key question within Landscape Ecology has been analysis of landscapes as dynamic entities at different temporal and spatial scales. Such studies of landscape change have traditionally been conducted on the basis of contemporary and historical geographical data e.g. maps and remote sensed data as well as statistics, field surveys and questionnaires. However, the ongoing development of digital data

and the corresponding spatial turn in social science and the humanities opens up new opportunities for interlinking different forms of contemporary and historical data in landscape change studies. This development, which accelerated during the last decade, is characterized by the emergence of new data types as well as new platforms for accessing increasing magnitudes of spatially explicit data, directly related to landscape change processes. Datasets which were previously difficult to access or did not contain spatial references are now available as geo-referenced digital records. Examples include digital archival material, place-related narratives, land parcel information, planning documents, historical maps and aerial photographs. Taking into account the parallel, rapid growth of conventional datasets such as remote sensed data, register data and socioeconomic data, researchers are entering into a new epoch of Big Data analysis. In addition, the development of citizen science and Volunteered Geographic Information (VGI) provides opportunities to rapidly produce datasets in coalition with the public. In addition, the digital development in other fields such as digital humanities and Geohumanities makes it possible to communicate and exchange data over traditional disciplinary boundaries. Therefore, researchers need to put increased effort into locating, filtering, evaluating and synthesizing datasets, preferably based on precise information on their historical context, in order to expand the domain of data sources used without giving in to errors of interpretation.

These developments provide landscape research with unprecedented access to data from multiple perspectives on the landscape and create a potential for improved integration of cultural and natural factors in integrative data analysis. On the other hand however, the massive amount of different data available raises a number of challenges, regarding;

1. How to secure reliability and accountability when using data and data categories developed for different purposes and by different institutions at different time periods.
2. How to develop frameworks and research methodologies within landscape ecology bridging the traditional divide between natural science, social sciences and the humanities, ie. the source paradigms of the datasets being used in increasingly synthetic analyses.
3. How to sample data and formulate theories based on subsets of data in an environment where it is becoming impossible to get an overview of all the data available.
4. How to use new data and digital platforms to communicate landscape changes to policy makers and the general public.

This symposium focuses on the potential of the array of new data sources to advance the field of landscape ecology. We welcome presentations with an integrative approach to the use of digital data in relation to analysis of landscape change, such as development of methods, presentation of empirical analysis or theory formulated on the basis of multiple data sources as well as integrative digital communication of such studies.

## What can participants expect to learn?

- State of the art research methodologies for combining varied, discrete historical and contemporary digital data to study landscape change processes.
- Integrative landscape change analysis based on the development of digital data.
- Insight into strengths and weaknesses of different digital data sources, e.g. categorical consistency, comparability and spatial and thematically precision.
- Insight into emerging ways to communicate with decision makers and the general public about landscape changes, their causes and effects.

## Impact

We are planning for a special issue of an international journal. Furthermore, outcomes can also be the initiation of a common project proposal. However, we will not decide before we know the character and quality of the submitted papers.

## Presentations

### Oral presentations

#### Title

[Exploring data uncertainty in landscape planning: Assessing and evaluating uncertainties in different land use/land cover data](#)

[Felix Neuendorf, Christina von Haaren, Christian... \(/iale2017/exploring-data-uncertainty-landscape-planning-assessing-and-evaluating-uncertainties\)](#)

[Agricultural registers for the assessment of landscape changes: Options and challenges for the application of IACS and LPIS data](#)

[Gregor Levin Department of Environmental Science... \(/iale2017/agricultural-registers-assessment-landscape-changes-options-and-challenges-application-iacs\)](#)

[Integrative analysis and mapping of land cover trajectories in 2001-2012 using global digital data](#)

[Klimanova O.A., Tretyachenko D.A., Alexeeva N.N... \(/iale2017/integrative-analysis-and-mapping-land-cover-trajectories-2001-2012-using-global-digital\)](#)

[The use of LPIS, aerial photographs and expert knowledge to quantify changes in farmland area](#)

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**Title**

[Eva Kerselaers, Anna Verhoeve, Elke Rogge ILVO \(... \(/iale2017/use-lpis-aerial-photographs-and-expert-knowledge-quantify-changes-farmland-area\)](#)

[Digital transdisciplinary approach to studying landscape changes around Copenhagen in the 20th century: establishing an overview of drivers for land use change across a century based on multiple data sources](#)

[Stig Roar Svenningsen The Royal Danish Library,... \(/iale2017/digital-transdisciplinary-approach-studying-landscape-changes-around-copenhagen-20th\)](#)

[Landscape preference assessment from digital sources: Comparing historical texts and annotated images in the English Lake District](#)

[Olga Chesnokova \(1\), Ian Gregory \(2\), Ross S.... \(/iale2017/landscape-preference-assessment-digital-sources-comparing-historical-texts-and-annotated\)](#)

[Countrywide analysis of long-term habitat area changes based on multiple types of historical and contemporary data sources](#)

[Marianna Biró \(1\), János Bölöni \(2\), Zsolt Molnár... \(/iale2017/countrywide-analysis-long-term-habitat-area-changes-based-multiple-types-historical-and\)](#)

[Discovering the lost Great War heritage in the present-day landscape based on an interdisciplinary landscape change analysis](#)

[Van den Berghe, Hanne, Gheyle, W., Note, N.,... \(/iale2017/discovering-lost-great-war-heritage-present-day-landscape-based-interdisciplinary-landscape\)](#)

[Using interactive modelling tools to engage with, inform and empower decision making in local communities of landscape managers – Experiences from participatory scenario development in Denmark using landscape scale nitrogen emission models](#)

[Andreas Aagaard Christensen \(1\) \(1\) Department of... \(/iale2017/using-interactive-modelling-tools-engage-inform-and-empower-decision-making-local\)](#)

[Participatory mapping of forest plantations in the Southern Highlands of Tanzania with open source data and tools](#)

[Joni Koskinen \(1\), Ulpu Mankinen \(1\), Niina... \(/iale2017/participatory-mapping-forest-plantations-southern-highlands-tanzania-open-source-data-and\)](#)

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