

Title of the symposium:

Assessing the patterns and drivers of land-use intensity change

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Symposium abstract

Land use and land-use changes are the major drivers of modification of ecosystems at different scales. Lately, we observe a shift of paradigm of monitoring and analyzing subtle and timing changes of land-use intensity (the extent and frequency of cultivation, inputs, and outputs) which is essential for an accurate assessment of land-use impacts on ecosystems. At the same time, the intensity of land use in a particular place is influenced by local site conditions, various inputs (technology, agrochemicals), and (global) market context which assesses land use intensity and its changes complex and difficult.

Another change of paradigm about the access to detailed and timing remotely-sensed satellite imagery, digital maps and statistics (e.g., yield data) opens opportunity to go beyond the standard land use assessment and to identify land-use intensity and its changes at very high temporal and spatial resolution. A combination of such datasets allows to understand the landscape complexity, vulnerability and resilience better, identify the precursors and triggers of landscape change. This may support the development of smart solutions for optimal allocation of land resources, assessment of suitable areas for intensification of production, consequences of potential upcoming shifts in technology, mapping agricultural land abandonment and recultivation of abandoned lands.

This session aims to determine the state-of-the-art of land use intensity assessment and identify research gaps by discussing the following questions:

- How can we measure the changes in land use intensity?
- How can we combine various datasets to study recent and historical land-use intensity change?
- What are the patterns of change in land use intensity?

- What are the driving factors of change in land use intensity?

How your symposia will improve landscape ecology science?

Land change processes that occur globally at high rates, like urbanization, intensification of agricultural production, deforestation, or land abandonment, are contributing to a rapid transformation of land use system and corresponding changes in ecosystem services provided. These rapid changes in ecosystem services are hard to grasp in traditional land use/land cover maps, as the services depend on processes which do not show up on the temporal, spatial and topical resolution of such datasets. Information on land use intensity and its change are vital for being able to interpret land use systems in regards to ecosystem services provisioning.

The ecological value of agriculturally used land, for example, might not merely depend on the fact that it is used as cropland or as pasture, but how the specific management regimes look like.

The amount and type of agrochemicals applied, or an intermediate period of fallow land on cropland can have a strong impact on biodiversity, carbon sequestration (etc.). Similarly, human or naturally caused forest disturbances like harvesting, windthrow or wildfire may result in very different land use intensities and consequently different ecosystem services.

Landscape ecology may profit greatly from giving more attention to the intensity of land use, not only for ecosystem service assessments but for being able to interpret changes in land and landscapes in regards to their contribution towards achieving the SDGs in general.

Broad thematic areas

Broad thematic areas 1st choice: Geography and landscape ecology

Broad thematic areas 2st choice: Technologies and landscape ecology (remote sensing, geomatics, ...)

Free Keywords

land use, agricultural land, driving forces, remote sensing