

Title of the symposium:

Temporal dynamics in landscape science: New applications and opportunities in social-ecological systems

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Symposium abstract

One of the greatest challenges in the Anthropocene is the design and implementation of development strategies that enable human progress while ensuring the sustainability of Earth's systems and biodiversity. Solutions will require an understanding of the spatial, temporal, and social dynamics within complex landscapes. However, landscape ecology has primarily focused on the spatial dynamics of landscapes with limited consideration of the temporal dimension. Given the rise of climatic and human impacts on landscape function, there is a critical need to identify and predict temporal processes and their impact on social-ecological systems. Improving our understanding of temporal drivers and characteristics of landscape pattern and process will require theoretical and technological advancements. These findings will enable new spatiotemporal design and management opportunities that can better address dynamic social and ecological needs.

This symposium will present and discuss novel approaches that investigate the role of temporal dimensions in social-ecological landscapes and implications for planning and management. We welcome contributions that:

- Develop novel methods and ideas to incorporate temporal dimensions into landscape and conservation planning.
- Analyze how landscape change affects the spatial distribution of resources and ecosystem services over time.
- Explore the role of social-ecological dynamics and land use legacies into current and future landscape trajectories.

How your symposia will improve landscape ecology science?

Addressing sustainability issues requires an integration of both social and ecological factors. However, this integration is difficult due to conflicting spatiotemporal scales of social-ecological processes and interactions across those scales in the space-time landscape mosaic. Up until now, landscape ecology has largely focused on the spatial dimensions of these patterns and processes. Yet, by focusing on the temporal dimension, we can better understand the dynamic provisioning of spatial patterns and processes across spatiotemporal scales, predict how those are likely to change in the future, and design adaptation strategies.

Advancing landscape ecology theory to better include time in research design and developing new tools to quantify and visualize spatiotemporal processes is highly relevant for diverse disciplines and has been emerging as a new research and management trend.

For example, efforts in the last year have highlighted ways to design spatiotemporal multifunctional landscapes, provide habitat for migratory species in working landscapes, implement dynamic ocean and fisheries management, design movable wildlife and forestry reserves, and better understand temporary ecosystem services in urban landscapes. This symposium will provide an opportunity for such temporal advancements to converge for the first time and develop a community of practice to advance research and applications of dynamic landscape ecology science.

Broad thematic areas

Broad thematic areas 1st choice: History, dynamic and transformations of landscapes

Broad thematic areas 2st choice: From landscape pattern to functions (variables, metrics, indicators, monitoring)

Free Keywords

Spatiotemporal, Temporal dimensions of landscape ecology, dynamic conservation

Outcomes of symposium

Special issue in a scientific journal (to be negotiated)

Notes

We intend to negotiate a special issue on the temporal dynamics of landscape science in the Journal of Landscape Ecology. Papers have already been identified by confirmed speakers. We will invite other speakers who propose to be in our symposium and those who will be attending the meeting to submit a manuscript. We will hold an informational meeting following our symposium to discuss details of the special feature and information on submitting a manuscript.