

Title of the symposium:

Mountain landscapes: protected areas, ecosystem services and future challenges

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Symposium abstract

A significant proportion of the global population depends on crucial goods and services provided by mountain and boreal regions, including fresh water (for domestic use, irrigation,

hydropower), raw materials, and recreation. However, mountain regions all over the world are facing multiple challenges due to environmental and socio-economic changes with related impacts on human livelihood, economy, and ecosystems. Mountain ecosystems belong to the most endangered ecosystems in the world and accelerating climate change leads to melting glaciers, reduced permafrost areas, changing streamflow, vegetation shifts and natural hazards. Extensive land-use changes in the past as well as ongoing land transformations affect biogeochemical cycles and alter landscape patterns with broadly unknown feedback mechanisms and interactions with climate change. Moreover, the development of tourism, especially in mountain areas, may contribute to economic welfare but has wide-ranging effects on social-ecological systems, which have developed over centuries. These current developments will result in altered landscapes in the future and a change in the provision of crucial ecosystem services. Here, local initiatives cannot face challenges for mountain people and resources alone, but these must be supported by measures and regulators at different levels of government to assure sustainability (resilience) of ecosystem services provision. On the other side, large part of protected areas are in mountain landscapes. In this context, the ecosystem services approach may play a role in management of those areas, but there are still many open questions: How may the ecosystem services approach support biodiversity conservation? What are the best methods and indicators to assess and evaluate ecosystem services in protected areas? What are present and futures scenarios for protected areas in the light of disturbances, pressures and changes? How may the ecosystem services approach help in conservation strategies to manage human/biodiversity (wildlife) conflicts? Can we compare similar areas inside and outside protected areas? Are there any differences between mountain and lowland protected areas in terms of ecosystem services assessment?

This symposium therefore addresses the question how the mountain landscape and associated ES will be affected by future environmental and socio-economic evolutions and how mountain regions and in particular protected areas can cope with these upcoming challenges.

We welcome contributions highlighting current and future landscape dynamics, ecological impacts driven by global change, as well as societal trends and tendencies. Contributions may present novel indicators, methods and tools to evaluate the services and benefits from mountain ecosystems, to understand the functioning of social-ecological systems and to assess the influence of drivers of change across spatial and temporal scales. To stimulate the discussion for a sustainable use of the natural resources, case studies from mountain regions all over the world reporting experiences and examples of sustainable solutions are particularly welcome.

How your symposia will improve landscape ecology science?

A synopsis on state-of-the-art challenges in mountain regions all over the world will stimulate discussions for the sustainable use of the environment and resources in and outside protected areas. Here, a portfolio on applicable concepts (i.e. ecosystem services

concept) and related limitations in a changing environment will be presented, thereby paving the way for novel and possibly ground-breaking research in social-ecological systems. Landscapes are the result of social-ecological systems and ecological research an important contributor for qualitative and quantitative assessment of available resources, bridging basic and applied research. Although a high percentage of the global population depends on ecosystem services provided by mountain regions (mountains make up 25% of Earth's land area and 25% of the world's biodiversity), research focusing on mountains is still underrepresented. This symposium aims at addressing important knowledge gaps focusing on basic understanding of ecological functions and its drivers of change in mountain landscapes as well as on societal trends in and outside mountain regions to be able to scope with future challenges. A particular focus is set on protected areas that are interested in the management and the preservation of the biodiversity and the landscapes, through scientific research, environmental education, and the promotion and the development of sustainable tourism. Thereby, the future landscape and its capacity to provide vital ecosystem services will be in the center of the discussions and the exchange of experiences from mountain regions worldwide will foster strategies to achieve a sustainable use of the natural resources.

Outcomes of symposium

Special issue with a scientific journal (to be negotiated)

Broad thematic areas

1st choice(mandatory) and 2st choice(optional)

Broad thematic areas 1st choice: Ecosystem services

Broad thematic areas 2st choice: Future: scenarios and new landscapes

Free Keywords

Social-ecological systems, mountains, global change, Landscape pattern and ecological processes, protected areas management