

Clarissa Graf

Analysis of tropical forest dynamics

Over the last decades Cambodia has experienced a drastic decrease in forest cover. Considering the importance of tropical forests this study aims for an improved understanding of the dynamics within tropical forests. Based on the results, recommendations of forest management practices that halt deforestation and promote reforestation shall be provided.

Due to the complexity of forest dynamics two aspects need to be taken into account: (a) a theoretical concept that describes the forest dynamics, and (b) the application of a model that can simulate forest dynamics. Forest dynamics are represented by the species' growth strategy that describes whether a plant grows faster or slower to promote its competitive advantage or overall survival. This information ultimately provides an insight into the state and health of a forest, thus its ability to respond to, and resist environmental changes.

In order to relate the model results with the conditions of the tropical forests in Cambodia, four study sites were selected that represent different forest covers (e.g. evergreen, deciduous). Specific information was measured on-site and used to adjust the model input to allow for more realistic model simulations and eventually recommendations for appropriate forest management practices. Furthermore, based on the assumption that sustainable management practices will only be implemented if economic returns are expected, the study further focuses on the impact of logging processes on the forest dynamics.

The study's results suggest that evergreen trees show a greater advantage over deciduous trees, which represent the expected influence of the tropical hot and humid climate. In three study sites the species tend to grow slower and thus promote the survival strategy. This indicates an overall higher ability of the forests to resist environmental changes. It can further be concluded that logging processes of 10% every 20 years generally promote the forest development. However, due to the model's overestimation of plant growth, the results need to be treated with caution.

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