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FORSITE - a dynamic forest site classification to support adaptive forest management

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Abstract

For the selection of appropriate tree species mixtures forest management asks for a sound database on forest site information especially under the consideration of climate change. Adaptive forest management takes into account the likely effects of climate change and innovative decision support approaches can help to increase the resistance and resilience of forest ecosystems. The lack of forest site information in large parts of Austria asks for a new approach in forest site classification and mapping. Climate change will affect the classification of forest sites and the future choice of tree species. Theoretical concepts for a "dynamic site classification" exist, but its large scale implementation as an integrated site and forest classification is a scientific challenge. In this contribution we present the approach based on a GIS-based geo-ecological stratification model. The database is based on a digital elevation model, a geological base map, digitally available site and climate data as well as empirical site parameters. A map of forest types will be derived based on thematic maps, including information about energy, water and nutrient balance. Those parameters will be modelled on the basis of point and area related data, which are combined to forest types with a uniform combination of site factors. The model allows a dynamic stratification of the forest types based on a logical combination of the geo-ecological parameters. In addition to the ecological facts, each forest type is characterized by silvicultural guidelines containing information on the choice of tree species, potential hazards and adaptive forest management practices.