Future Gis-challenges in Modelling

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Abstract

We live in a fast changing world. Actually we are confronted with profound changes of our societies as well as with our natural site conditions. Therefore, the estimation of possible future situations and the deduction of adaption strategies are of growing importance for planners and decision
makers. Two important thematic fields for future challenges in GIS (Geographical Information System) modelling are focussed: **1.) Integration of socioeconomic and natural site content** . Most societies nowadays are undergoing a fast and broad transformation process ("globalisation") with fundamental changes in demography, ethical values, technology application, labour management, etc. On the other side environmental conditions ("global climate change") are assumed to be soon changed profoundly. However, socioeconomic and natural sciences often are "introverted" but not able to really communicate with each other as they have different research objects, use different methods and speak different languages. As a result the two research fields often are parallelized but rarely really integrated. To be able to link both discipline fields in a GIS, the challenge is to
establish a defined correlation of socioeconomic characteristics within a certain spatial unit. On a regional level the example of farm types linked
with landscape units is given. **2.) Visions of future spatial patterns** . Possible futures often are sketched in form of scenarios. Mostly, several
scenarios, running over many years, serve to create a database of results within a given (modelling) frame to support decision making in spatial
planning. Thus, there is a growing needs for GIS-based „spatial scenario construction models" (SSCS) that enable the translation of assumed future changes (e.g. in land use) in spatial patterns and time steps. While e.g. the mathematical dimension of a population growth or land use change is
"easy" to calculate on aggregated computations of interest, the spatial distribution of a future population or land use pattern within a larger
region is a very sophisticated affair. Defined push and pull factors can lead to a new assembling of land use classes. The given example illustrates amongst others the development of farmland expansion in Africa (Benin), driven by a strong population growth.

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