

BIOTA-E02

GIS and Remote Sensing in Support of Biodiversity Management at the Landscape Scale for Rainforests in Eastern Africa

Project typ

Funded by the BMBF (funding code 01LC0625D1) as subproject E02 within the joined project frame BIOTA-Africa (*Biodiversity Monitoring Transect Analysis in Africa*); run time of the 3rd project phase June 2007 - May 2010



Field

Applied geoinformation processing with focus on GIS and remote sensing

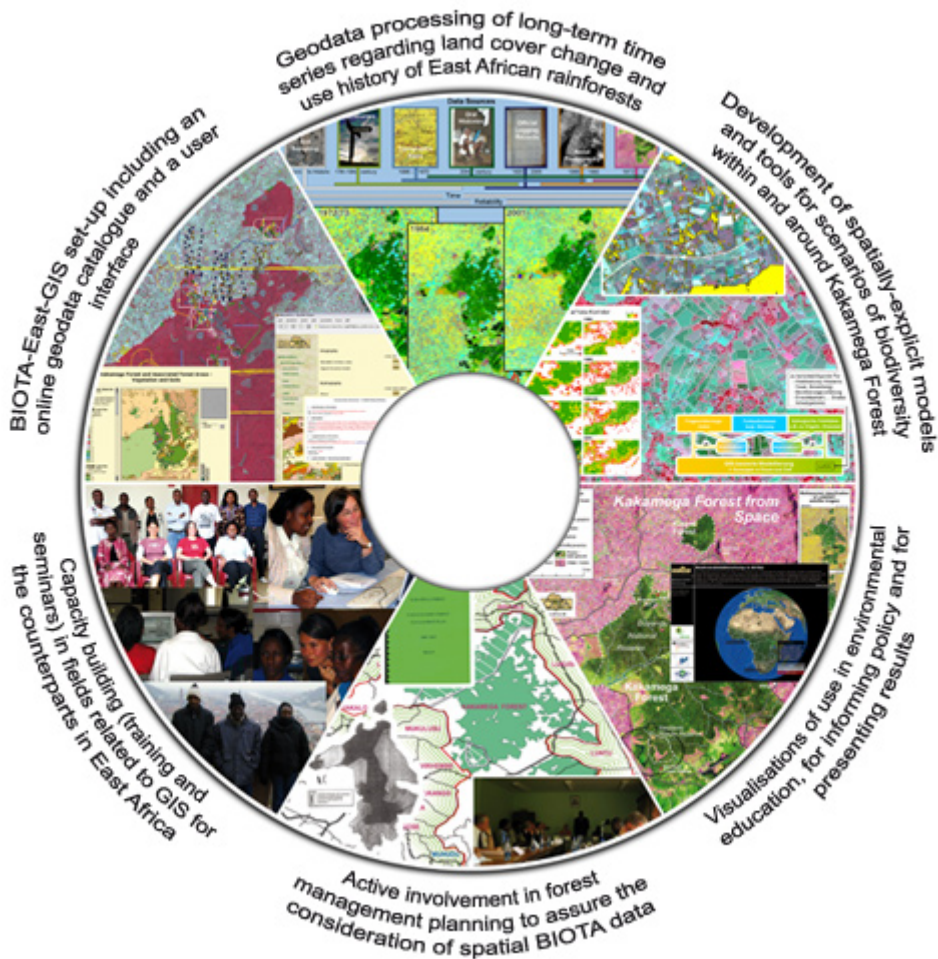
Key words

Online geodata service, customized GIS, remote sensing, timeseries of forest cover change, visualisation, development of spatially-explicit models, simulations of biodiversity, socio-economical scenarios, forest management planning, capacity building


Project background and aims

Within BIOTA-East Africa the influence of fragmentation and human use on the biodiversity of East African rainforests is investigated following an interdisciplinary and integrated research approach. Especially when aiming at recommendations at the landscape level, this also in the context of climate change, biodiversity research is in need of geo-spatial data. Here the BIOTA-East-GIS serves as the common platform a) to link observations of the different subprojects via spatial information stored on natural and socio-economic variables, and b) to extrapolate field work in space and time. Remote sensing is a valuable mean to provide the needed time series of land use/cover change and intra-annual variations in biophysical parameters. With the increasing availability of spatial data the spatially-explicit modelling of biotic, ecological and socio-economic variables is gaining importance. For future research as well as in the management of Kakamega Forest it has to be ensured that the geodata is available, tools are developed, personnel are trained regarding its use, and facilities are created close-by and with the necessary equipment. Finally, visualisations play an important role in transferring knowledge to the many potential user groups. Aims of E02 for the 3rd project phase:

- The finalisation of the BIOTA-East GIS (data integration, user interface development, training) and geodata visualisation
- Spatial extrapolation of BIOTA-East findings on biodiversity and ecosystem function and interdisciplinary spatial analyses
- Identifying structural parameters and modelling socio-economic scenarios for the farmland and deriving a vegetation map for forest management
- Applying spatial information in forest management and land use planning.



Project staff

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- Nicholas Mitchell, M.A.
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E02 cooperative partners

- Kenya Wildlife Service (KWS, Nairobi): N.N., Richard Oluoch Odongo, M.Sc., Stephen Manegene, M.Sc.
- Kenya Forest Service (KFS, Nairobi): Eric Tetea Nahama, B.Sc., J.K. Macharia



Further cooperations

- BIOTA East Africa project partners from 9 other subprojects
- Kenyan counterparts: NMK, KEEP
- Cooperation partners in Uganda: NFA, BFP
- Further cooperations within the BIOTA Africa project frame

Latest publications

- Huth, K., N. Mitchell & G. Schaab (in print): Judging and visualising the quality of spatio-temporal data on the Kakamega-Nandi forest area in west Kenya. In: A. Stein, J. Shi & W. Bijker (Ed.), Quality aspects in spatial data mining, London, Boca-Raton.
- Mitchell, N. & G. Schaab (in print): Developing a disturbance index for five East African forests using GIS to analyse historical forest use as an important driver of current land use/cover. In: African Journal of Ecology.

- Lübker, T. & G. Schaab (in print): Prozessierung von 631 km² QuickBird-Satellitenbilddaten für das Gebiet Kakamega Forest (Westkenia) – Erfahrungen mit Atmosphärenkorrektur, Mosaikbildung und Pan-sharpening. In: Photogrammetrie - Fernerkundung - Geoinformation (PFG).
- Lübker, T. & G. Schaab (in print): Identifying benefits of pre-processing large area QuickBird imagery for object-based image analysis. In: T. Blaschke, S. Lang & G. Hay (Ed.), Object-based image analysis – spatial concepts for knowledge-driven remote sensing applications, Heidelberg.
- Lung, T. & G. Schaab (submitted): Comparative analysis of three protected East African forest areas regarding dynamics in land cover change: a Landsat-based approach.
- Zimmer, H., M. Danzeglocke & G. Schaab (2006): Biodiversitätsforschung in Ostafrika. Eine Multimedia-Präsentation zum Verbundprojekt BIOTA-Ost. DVD medium.

Further information

Regarding the last project phase
Regarding project integration in BIOTA-Africa
On the Web-pages of the BIOTA-E02 working group

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