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Predicting the impact of Giant Molerat influenced vegetation on Sanetti Plateau, Bale Mountains, Ethiopia

Luise Wraase[1], Victoria Reuber[2], Philipp Kurth[1,3], Nina Farwig[2], Georg Miehe[4], Lars Opgenoorth[3], Dana Schabo[2], and Thomas Nauss[1]

[1]Philipps-University Marburg, Department of Geography, Environmental Informatics, Marburg, Germany (luise.wraase@geo.uni-marburg.de)

[2]Philipps-University Marburg, Department of Biology, Nature Conservation, Marburg, Germany

[3]Philipps-University Marburg, Department of Biology, Global Change Ecology, Marburg, Germany

[4]Philipps-University Marburg, Department of Geography, Biogeography, Marburg, Germany

Ecosystem engineers continuously shape and re-shape the spatial and temporal structure of the environment. Burrowing animals are an important group of ecosystem engineers, because of their ability to rework sediments and soils with consequences for e.g. soil formation and vegetation patterns. Simultaneous, burrowing animals depend on climate, local soil characteristics and vegetation. The endemic Giant Molerat (GMR) is a burrowing animal and important ecosystem engineer in the Bale Mountains. As part of the Bale Mountain Exile Hypothesis Project, the aim of this study is to investigate (1) the interlinkages between GMR, climate and vegetation patterns as well as (2) to upscale the influence of GMR on the vegetation pattern across the plateau with Sentinel satellite data. Field data comprise 47 paired plots of 5m x 5m with and without GMR activity. Additionally, 1.500 independent GMR burrow openings have been mapped. For investigating interlinkages, all parameters are first pre-analysed for correlations and their dependencies (1). In the following these results, the remote sensing data and the individual variables are implemented into the prediction model. To increase the accuracy, an error correction of the model is pursued. For this, the area is calculated into likelihoods of areas influenced by GMR, based on the vegetation survey pairs serving as training areas for the correction. The corrected results are used as final input model in a machine learning-based classification approach using Random Forest with forward-feature selection and leave-feature-out option (2). In the following the results of this ongoing upscaling approach used for the Sanetti Plateau, Ethiopia is presented.