Announcement for a Master thesis topic:

Climatic variability across the Kenyan coastal forests

Background: Kenya still hosts a number of coastal forest patches that are renowned for their high biodiversity. The coastal climate is tropical with two distinct rainy seasons. During our recent field research in the Arabuko Sokoke Forest, one of the largest remaining forest patches, we noticed large variations in the onset and duration of the small rainy season.

Problem: Delayed or reduced rainfall has strong repercussions on ecological processes inside the forest, such as flowering and fruiting cycles. While the East African coast is known to be affected by El Niño/La Niña events, rainfall patterns are also affected by global climate change (Palmer et al. 2023).

Approach: This Master thesis aims to analyze long-term daily rainfall data in order to identify the changes in rainfall variability that have occurred at the Kenyan coast since 1981. Rainfall data will be extracted for selected coastal forest patches from the Climate Hazards Group Infrared Precipitation with Stations (CHIRPS) (Funk et al. 2015). The analysis will include the calculation of major rainfall indices as well as statistical tests (cf. Hubertus et al. 2023). For comparison and validation purposes, field data from local meteorological stations may be available.

Supervision: The thesis can be conducted at the University of Passau or at the Martin Luther University Halle-Wittenberg with joint supervision by Prof. Dr. Christine Schmitt, University of Passau, and Dr. Mike Teucher, MLU Halle-Wittenberg. Our local research partner is based at Pwani University, Kilifi, Kenya.

Requirements: Interested students should have a background in Geography (in particular climate and/or vegetation geography). Prior knowledge of R and GIS / geospatial analysis is of great advantage. You should be keen to dive into the topic and have the ability to familiarize yourself with the required methods for data analysis.

Contact: Please send a few lines of motivation, your CV and a recent excerpt with your marks to both, Prof. Dr. Christine Schmitt: christine.schmitt@uni-passau.de and Dr. Mike Teucher: mike.teucher@geo.uni-halle.de

Literature:

Funk, C.; Peterson, P.; Landsfeld, M.; Pedreros, D.; Verdin, J.; Shukla, S. et al. (2015): The climate hazards infrared precipitation with stations - a new environmental record for monitoring extremes. *Scientific data* 2, 150066.

Hubertus, L.; Groth, J.; Teucher, M.; Hermans, K. (2023): Rainfall changes perceived by farmers and captured by meteorological data: two sides to every story. *Regional Environmental Change* 23, 75.

Palmer, P.I.; Wainwright, C.M.; Dong, B.; Maidment, R.I.; Wheeler, K.G.; Gedney, N. et al. (2023): Drivers and impacts of Eastern African rainfall variability. *Nature Reviews Earth & Environment* 4 (4), p. 254–270.

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