

Assessment of Land Cover Dynamics and Drivers of Urban Expansion using Geospatial and Logistic Regression Approach in Wa Municipal, Ghana

Mawuli Asempah*, Wahib Sahwan, Brigitta Schütt

Physical Geography, Institute of Geographical Sciences, Freie Universität Berlin, Malteserstraße 74-100, 12449 Berlin, Germany

* Correspondence: mawuli.asempah@fu-berlin.de, Tel.: (+49-30-838-70239)

Supplementary Note 1 – The Dependent and Independent variables for assessing the Urban expansion.

Maps of dependent and independent variables employed in assessing the drivers of urban expansion from 1990-2001, 2001-2010, 2010-2020 and 1990-2020. (see section 3.4)

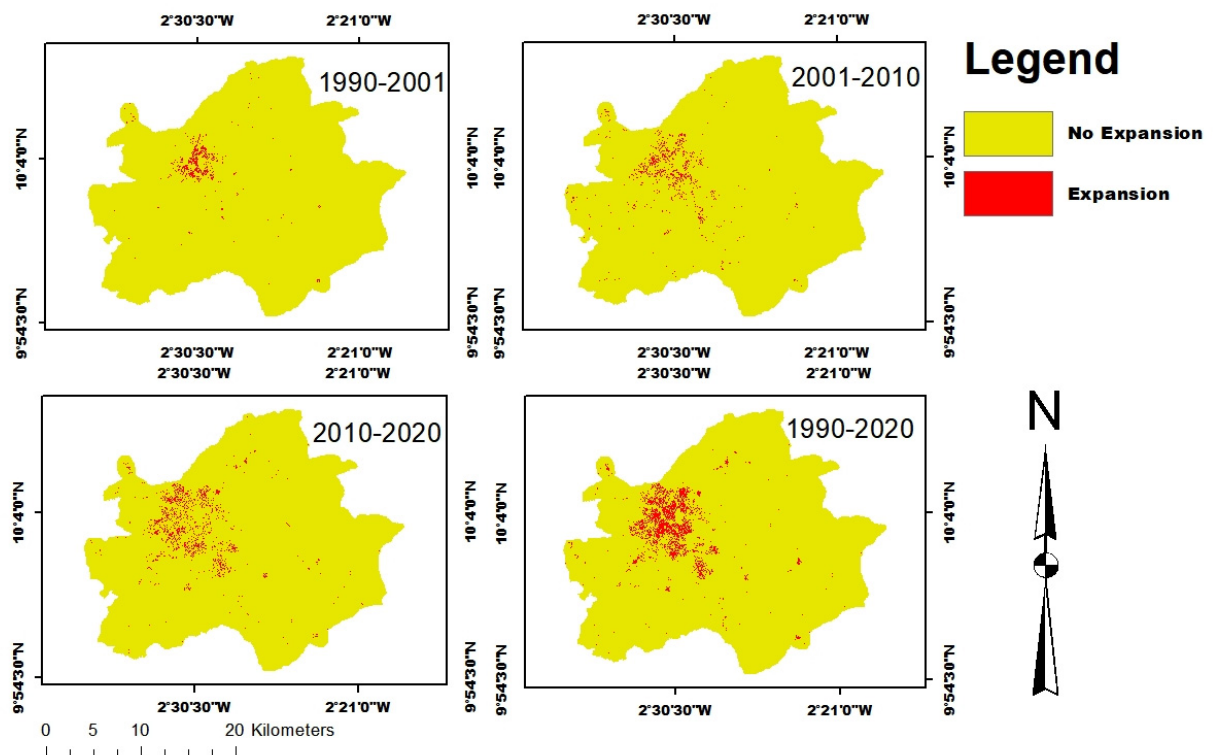


Figure S1. The Raster layer of urban expansion obtained from change detection for all the time slices and served as dependant variables in the logistic regression analysis. The dichotomous variables were 1= expansion and 0=no expansion.

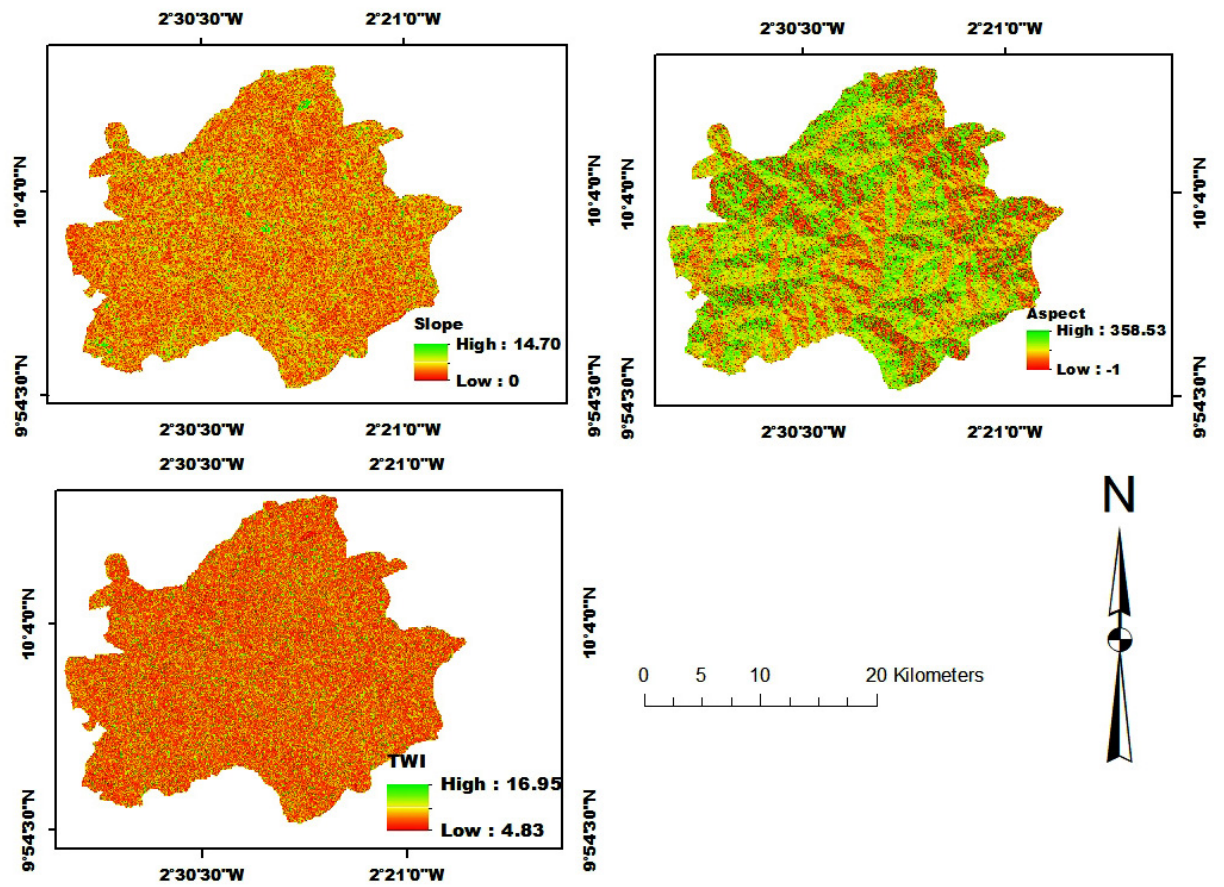


Figure S2. Raster layers of the topographic independent variables explored for relationship with urban expansion. They include: slope, Aspect and Topographic wetness index (TWI).

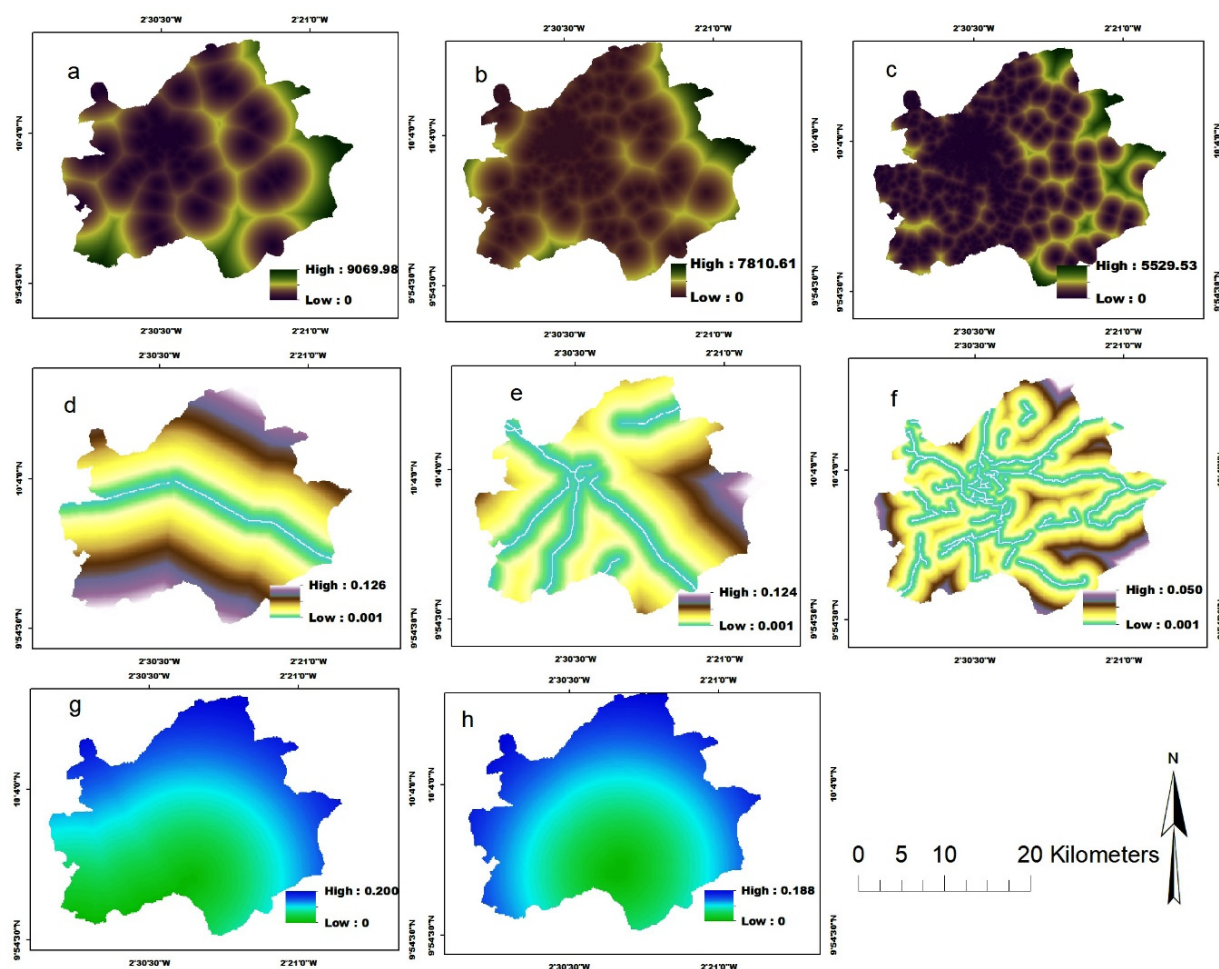


Figure S3. Raster layers of the location independent variables explored for their relationship with urban expansion. (a= Distance to settlement in 1990, b= Distance to settlement in 2001, c= Distance to settlement in 2010, d= distance to primary road, e= distance to tertiary road, f=distance to unclassified road, g= distance to river, h= distance to stream).

Supplementary Note 2 – Further details of Landsat satellite images used in the LULC classification.

Table S1. Landsat satellite used for classification, their scene ID number and the time of acquisition

Satellite Name	Scene ID number	Date of Acquisition	Time of Acquisition
Landsat 5	LT51950531990285MPS00	October 12, 1990	09:46:28.2240060Z
Landsat 7	LE71950532001307EDC00	November 03, 2001	10:15:13.1215482Z
Landsat 7	LE71950532010316ASN00	November 12, 2010	10:19:33.0561608Z
Landsat 8	LC81950532020320LGN00	November 15, 2020	10:27:08.9585710Z