

ABSTRACT

Migration and climate change form a nexus having significant consequences on the Land use and land cover change of North-Eastern Nigeria. This research investigated the impact of migration and climate change on land use and land cover transformation of Northeastern Nigeria, targeting Adamawa, Borno and Gombe States between 1981 and 2021. The study used NASA POWER data (rainfall and air temperature), questionnaire, net migration data and multispectral satellite images, which were combined to analyze the correlation between the study variables. Modified Mann Kendall trend analysis, IDW interpolation, questionnaire analysis, Landsat images analysis and Spearman's rank correlation analysis were carried out using R Studio, SPSS, Arc GIS 10.8, Google Earth Engine and TerrSet 18.31 and Python. Results of the study revealed that rainfall is decreasing ($z = -0.442$), maximum temperature is increasing ($z = 0.046$) while minimum temperature is on a marginal decline ($z = -0.005$). Higher precipitation was observed during the wet season (100.95mm), maximum temperatures peaked during the dry season (38.09 oC), while minimum temperatures were higher during the wet season (20.94 oC). Transformation in the land use and land cover was observed, especially in the increasing trend in built-up (720.61 km² in 1991 to 1725.67 km² in 2021). Urban expansion was particularly pronounced in state capitals, corresponding with a reduction in cultivated land (41.14 percent to 30.75 percent), forest (6.64 percent to 4.92 percent), bare/sparse land (0.54 percent to 0.48 percent) and water bodies (3.86 percent to 3.64 percent) and projected to increase to 3385.27 km² in 2040. The accuracy assessment result exceeds 80 percent. The result from the questionnaire administered showed 55.5 percent of migrants tend to converge more into the state capital from neighboring surrounding rural communities (rural-urban migration) and migration in the study area is predominantly driven by job opportunities (33.5 percent), education (30.3 percent) and insecurity (28.8 percent). Complex interactions were observed between climatic variables (rainfall and temperature), net migration, and LULC classes. Variations suggest how climatic factors and migration influence land use and land cover changes. Increasing urbanization, deforestation, increased competition of water resources, loss of biodiversity, increased land fragmentation, land degradation, loss of cultural heritage and spread of diseases were identified as the impacts of migration and climate change on land use and land cover transformation of North-Eastern Nigeria. The study advocates for proactive dissemination of climate information, integrating climate change and migration policies into national and developmental plans, providing support to migrants, especially Internally Displaced Persons (IDPs), encouraging climate-smart agriculture, enhancing access to education, health care, social services and peaceful co-existence.