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DESERTIFICATION IN NIGERIA: A PRODUCT OF CLIMATE CHANGE OR HUMAN ACTIVITIES? A CASE OF DESERT ENCROACHMENT MONITORING IN NORTH-EASTERN NIGERIA USING REMOTE SENSING TECHNIQUES

Abstract

In Nigeria, desertification has become one of the most pronounced ecological disasters, with the impacts affecting eleven frontline states. This has been attributed to a range of both natural and man-made factors. This study applied an innovative remote sensing based change detection analysis to explore landuse/landcover changes and detect major conversions from ecological land covers to sand dunes. Results indicate that area covered by sand dunes have doubled over the 25 year period under consideration (1990 to 2015). Although about 0.71 km2 of sand dunes have been converted to vegetation, inferring the successes of the various international, national, local and individual afforestation efforts; conversely about 10.1 km2 of vegetation were converted to sand dunes, implying about 14 times more deforestation compared to afforestation. Comparing the progression of sand dune with climate records of the study area, increasing rainfall and lower temperatures were observed especially in 1994, 2005, 2012 and 2014. This should have translated to a positive feedback for desertification in the study area. This was however not the case. Based on the findings of this land cover change, trend and conversion assessment , observations from ground thruthing, previous literatures and climate records, it can be inferred that desertification in Nigeria is not solely a result of climate change, but also a function of human activities driven by poverty, population increase and failed government policies. Further projections by this study also reveal a high probability of more farmlands being converted to sand dunes by the year 2030 and 2045.