

VEGETATION CHANGE ASSESSMENT IN THE NIGERIAN SAVANNAH USING THE MAXIMUM VALUE COMPOSITE, NORMALIZED DIFFERENCE VEGETATION INDEX AND SOCIAL SURVEY

Mustapha Zakariya Karkarna mni

Department of Environmental Management, Bayero University, Kano

Corresponding Author's email: <mzkarkarna@gmail.com



Abstract

This study was conducted to examine vegetation change assessment in Nigeria's savannah due to continued exploitation of natural resources to meet human needs. The study aimed at understanding and assessing the nature and rate of vegetation change in the savannah zone of Nigeria. The study covers Jigawa, Bauchi and Plateau in Sahel, Sudan and Guinea Savannah vegetation belts. Triangulation method was used since it involved the application and combination of two research methods on the same phenomenon. Remote sensing application and questionnaire methods were used. The remote sensing involved the use time series SPOT VEGT of 1998-2018, it was downloaded from <http://free.vgt.vito.be>. The data covers the years between 1999 and 2018 and consists of 10 day synthesis NDVI (S10) data. Maximum value composite technique was used to remove atmospheric moisture, cloud and simple haze in the imageries. The 10 days, monthly and later annual composites were generated in image calculator tool in IDRISI selva 17.0 software. Time series trend analysis was performed to determine the vegetation trends of the annual NDVI. The annual composites were imported into GIS environment to analyse spatial variations of NDVI in the study area. The composite of 2011 was noisy hence was not used in the analysis. The result indicated that NDVI is characterised by moderate spatio-temporal heterogeneity. The relatively high value of NDVI (above 0.4) is mainly distributed in Jos East, Riyom, Bokokos which are located south of the area while the low value (slightly below 0.3) is obtained in Gamawa Gurri and Ringim. Furthermore, significant positive trends in overall greenness were observed in the southern region while negative trends are also present in the north. A total of 300 copies of the questionnaire (100 per state) were purposively distributed to selected staff of the Ministry of Environments and other stakeholders in each of the states. Findings of the study shows that overall 19% of the respondents opined that changes occurred within 1-5 years, 21% opined 5-10 years while 52% opined that changes in vegetation has been occurring for over 10 years. Assessment of vegetation condition shows that vegetation composition and changes affects the sustainable development. This study recommended for studies on vegetation dynamics (in relation to climate and anthropogenic influences) with high resolution satellite data in order to remove the uncertainties associated with coarser resolution remote sensing based vegetation data.

Keywords: *Vegetation, Conservation Savannah*