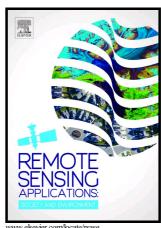
Author's Accepted Manuscript

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PII: S2352-9385(17)30073-3

DOI: https://doi.org/10.1016/j.rsase.2018.03.006

RSASE123 Reference:

To appear in: Remote Sensing Applications: Society and Environment

Received date: 29 March 2017 Revised date: 22 October 2017 Accepted date: 14 March 2018

Cite this article as: Modupe Areola and Mayowa Fasona, Sensitivity of Vegetation to Annual Rainfall Variations over Nigeria, Remote Sensing Applications: Society Environment, and https://doi.org/10.1016/j.rsase.2018.03.006

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Sensitivity of Vegetation to Annual Rainfall Variations over Nigeria

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ABSTRACT

Distribution and composition of vegetation are strongly controlled by climatic conditions. Of

the climatic elements, precipitation has been found to be a major influence on the abundance,

health and productivity of vegetation. This study investigated the spatial and temporal pattern

in the sensitivity of vegetation to rainfall in Nigeria between 1980 and 2009. Rainfall data

collected from 23 observation points were analysed and spatially correlated with monthly

Normalized Difference Vegetation Index (NDVI) values for the same period to estimate the

responsiveness of vegetation to annual variations in rainfall. The results revealed a non-

uniform pattern in the sensitivity of vegetation to rainfall across the country. Areas in the

forest and guinea savannah zones with higher mean annual rainfall exhibited stronger

correlation, while the Sudan savannah zone exhibited weaker correlations. However, further

northwards in the Sahel fringes, the correlations between rainfall and vegetation were found

to be very negligible (mostly zero), except for the forested wetland around the Lake Chad

where stronger positive coefficient of correlation were found. The findings have implications

for ecological studies, agricultural planning and other socio-economic activities, which are

directly concerned with vegetation and vegetal cover. This knowledge could be put to use to

ensure better planning and decisions that concern the environment.

Keywords: NDVI, vegetation, precipitation, variations, spatial correlation

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