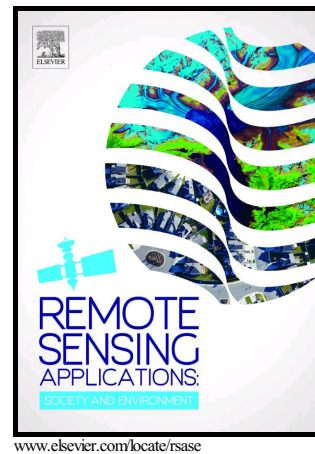


Author's Accepted Manuscript

DESERTIFICATION RISK ANALYSIS AND ASSESSMENT IN NORTHERN NIGERIA

Oloukoi Joseph, Adagbasa Efosa Gbenga, Dasat Gloria Langyit



PII: S2352-9385(17)30062-9
DOI: <https://doi.org/10.1016/j.rsase.2018.04.012>
Reference: RSASE140

To appear in: *Remote Sensing Applications: Society and Environment*

Received date: 11 March 2017
Revised date: 8 February 2018
Accepted date: 25 April 2018

Cite this article as: Oloukoi Joseph, Adagbasa Efosa Gbenga and Dasat Gloria Langyit, DESERTIFICATION RISK ANALYSIS AND ASSESSMENT IN NORTHERN NIGERIA, *Remote Sensing Applications: Society and Environment*, <https://doi.org/10.1016/j.rsase.2018.04.012>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

DESERTIFICATION RISK ANALYSIS AND ASSESSMENT IN NORTHERN NIGERIA

Oloukoi Joseph¹, Adagbasa Efosa Gbenga^{2*}, Dasat Gloria Langyit³

¹Department of Cartography;

²Department of Photogrammetry and Remote Sensing;

³Department of Cartography; African Regional Institute for Geospatial Information Science and Technology (AFRIGIST)

*Corresponding Author:

African Regional Institute for Geospatial, Information Science and Technology

(AFRIGIST), Off Road 1, Obafemi Awolowo University Campus, P. M. B. 5545, Ile-Ife,

Osun State, Nigeria. Tel: +2348039293563, +27837016751. efe_ben2000@yahoo.com

ABSTRACT

Changes in climatic conditions and human activities have led to increase in surface temperature, potential evapotranspiration and decrease in rainfall, thereby increasing desertification risk in the study area. Data used included Landsat images and meteorological data (1984-2015). Land use land cover change (LULCC) was estimated using maximum likelihood supervised classification. Land surface temperatures (LST) was computed from thermal bands while desertification risk index was calculated using metrological data from 5 weather stations and Normalized Differential Index (NDVI) values. The results from the LULCC revealed a significant reductions in rangeland by 13,418 Km²; while water body and rock out-crop were also affected by 1, 255 Km² and 2, 592 Km² respectively. The result also showed built-up and barren land with increase estimated at 5, 755Km² and 2016 11, 512 Km² respectively. LST increased by 2.8°C from 1984 to 1999 and 2.7°C from 1999 to 2014 with values at 43.8°C in 1984, 46.6°C in 1999 and 49.3°C in 2015. A similar trend was observed from climatic data obtained while reduction in amount of rainfall was recorded over the years. Desertification Risk Index (DRI) was used to identify areas at risk with notable increase in 2014 encroaching south-ward. Desertification risk between 1984 and 1999 recorded the least threat with 1.32 and 8.53 as the lowest and highest risk rate while in 2014 it increased with the highest at 9.1 and the least value of 1.97. The results of the study show that Desertification in Bauchi State is evident due to the rapid changes in climatic conditions and anthropogenic activities.

Keywords: Desertification, Climatic Variations, Land Surface Temperature, Encroachment, Environmental Degradation, Land use, Remote Sensing

INTRODUCTION

Desertification is an environmental problem occurring in dry lands with its effects experienced across the globe (Liu et al., 2014). Desertification is a form of land degradation (Escadafal *et al.*, 2015) in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities (UNCCD, 2011). Anthropogenic activities such as deforestation can alter climatic conditions thereby affecting surface temperature, solar radiation immersion, evaporation rates leading to desertification (Javed et

Download English Version:

<https://daneshyari.com/en/article/8866300>

Download Persian Version:

<https://daneshyari.com/article/8866300>

[Daneshyari.com](https://daneshyari.com)