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A GEO-SPATIAL ASSESSMENT OF DROUGHT IN NORTHERN NIGERIA USING VEGETATION
INDICES AND LAND SURFACE TEMPERATURE APPROACH.

Abstract

In recent years, the issue of drought occurrence has been one of the top agenda discussed at most climate change conferences and panels. This is because drought has negatively influenced the natural habitat and likelihood of the region where it's occurring. This study aims at assessing the spatio-temporal variation of drought in northern part of Nigeria within the last decade. It employs the use of multi-satellite sensors like NigeriaSat-1, Landsat ETM+ and the Moderate Resolution Spectro-radiometer (MODIS) datasets for 2005, 2010 and 2015. The temporal Normalized Difference Vegetative Index (NDVI) and Land Surface Temperature (LST) maps were extracted from MODIS satellite, while the Normalized Difference Water Index (NDWI) map was generated from the green and Near-infrared bands (NIR) of NigeriaSat-1 and Landsat Imagery. The spatio-temporal variation of drought in the study area was based on the 3 ecological zones (Guinea, Sudan and Sahel savanna) within Northern Nigeria. Analysis of NDWI, NDVI and LST were then carried out with respect to the pixels that fall within each ecological zone. A comparison of vegetation index and surface temperature characteristics of a particular area is useful for drought risk mapping. Hence, this drought risk map could play a vital role in the decision making process for drought monitoring strategies and policies.