World Academy of Science, Engineering and Technology
International Journal of Mathematical and Computational Sciences
Vol:14, No:12, 2020

Change Detection of Vegetative Areas Using Land Use Land Cover of Desertification Vulnerable Areas in Nigeria

Authors : T. Garba, Y. Y. Sabo A. Babanyara, K. G. Ilellah, A. K. Mutari

Abstract : This study used the Normalized Difference Vegetation Index (NDVI) and maps compiled from the classification of Landsat TM and Landsat ETM images of 1986 and 1999 respectively and Nigeria sat 1 images of 2007 to quantify changes in land use and land cover in selected areas of Nigeria covering 143,609 hectares that are threatened by the encroaching Sahara desert. The results of this investigation revealed a decrease in natural vegetation over the three time slices (1986, 1999 and 2007) which was characterised by an increase in high positive pixel values from 0.04 in 1986 to 0.22 and 0.32 in 1999 and 2007 respectively and, a decrease in natural vegetation from 74,411.60ha in 1986 to 28,591.93ha and 21,819.19ha in 1999 and 2007 respectively. The same results also revealed a periodic trend in which there was progressive increase in the cultivated area from 60,191.87ha in 1986 to 104,376.07ha in 1999 and a terminal decrease to 88,868.31ha in 2007. These findings point to expansion of vegetated and cultivated areas in in the initial period between 1988 and 1996 and reversal of these increases in the terminal period between 1988 and 1996. The study also revealed progressive expansion of built-up areas from 1, 681.68ha in 1986 to 2,661.82ha in 1999 and to 3,765.35ha in 2007. These results argue for the urgent need to protect and conserve the depleting natural vegetation by adopting sustainable human resource use practices i.e. intensive farming in order to minimize persistent depletion of natural vegetation.

Keywords : changes, classification, desertification, vegetation changes
Conference Title : ICSRD 2020 : International Conference on Scientific Research and Development
Conference Location : Chicago, United States
Conference Dates : December 12-13, 2020