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REMOTE SENSING AND GIS BASED PREDICTIVE MODEL FOR DESERTIFICATION EARLY WARNING IN NORTH EASTERN NIGERIA

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Abstract:
Literature abound which attest to the growing problem of desert encroachment in the north eastern part of Nigeria. The southward shifting dunes have been observed to be threatening life supporting oasis, burying water points and engulfing major roads in the affected areas. This paper tries to predict the areas where desert conditions are likely to spread to by the year 2030. The MARKOV chain principle was used to perform the prediction while two geographic information systems (GIS) techniques (Cellular automata and multi-objective land allocation – MOLA) were used to create a map out of the results determined from the prediction. In order to measure the pulse (so to speak) of the inhabitants, questionnaires were also distributed and analyzed. Results indicate that the Rivers Kamandugu Gana and Kamandugu Yobe have helped in reducing the spread of the desert to the south by serving as a natural obstacle to the spread. However, these two rivers are beginning to lose the battle. Predictions show that the valleys of these two rivers are among the most vulnerable areas. Once the vegetation in these valleys is finally covered by sand dunes, the southward spread of the Sahara in North Eastern Nigeria is expected to move faster, since no natural obstacle is left to stop its advance. The need for public enlightenment has been stressed in several literatures. It is still as relevant now as it was in the past.

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