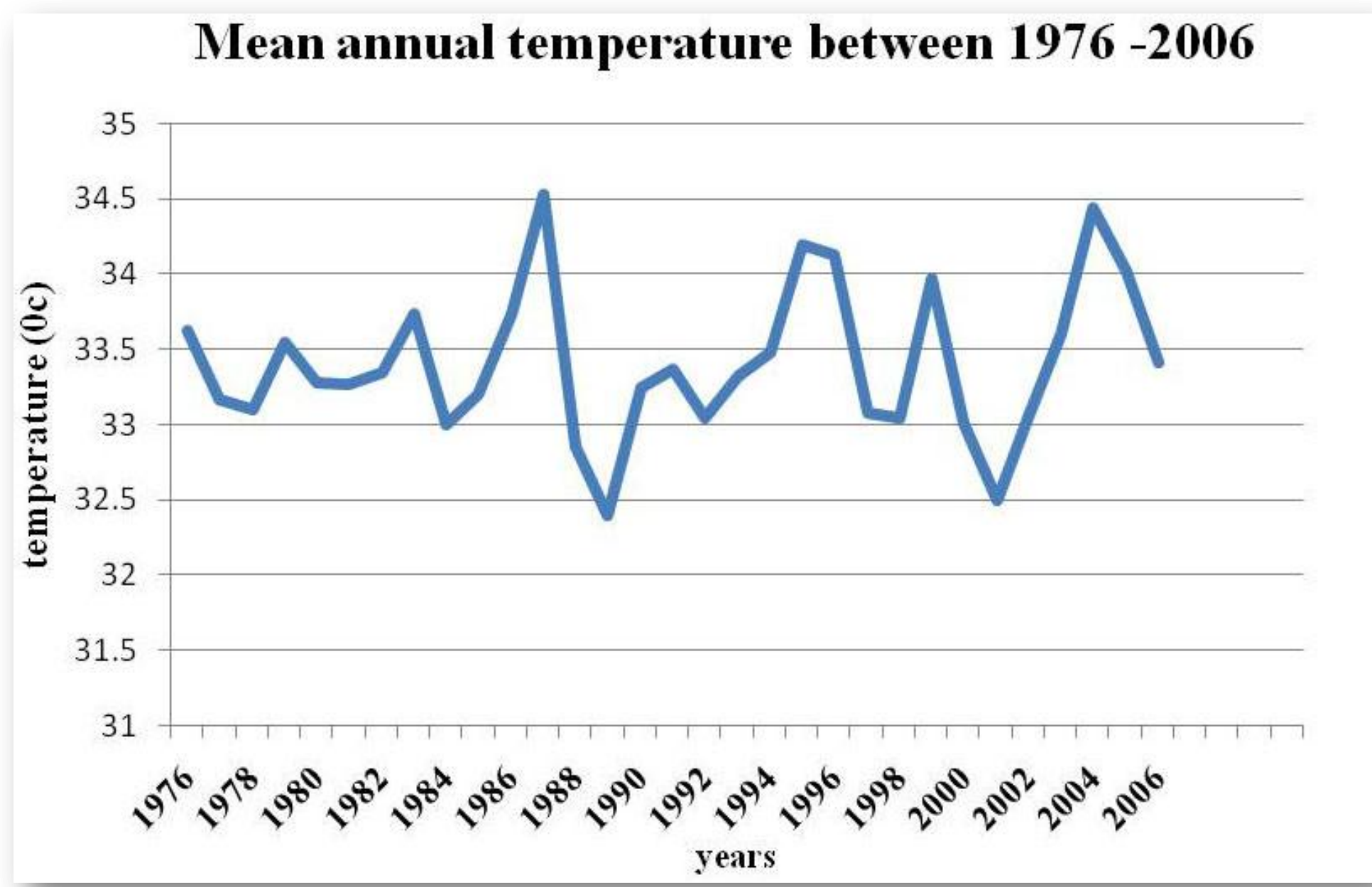


LINKING CLIMATE CHANGE AND URBANIZATION IN KANO METROPOLIS AND ENVIRONS IN THE SUDANO SAHELIAN BELT OF NIGERIA

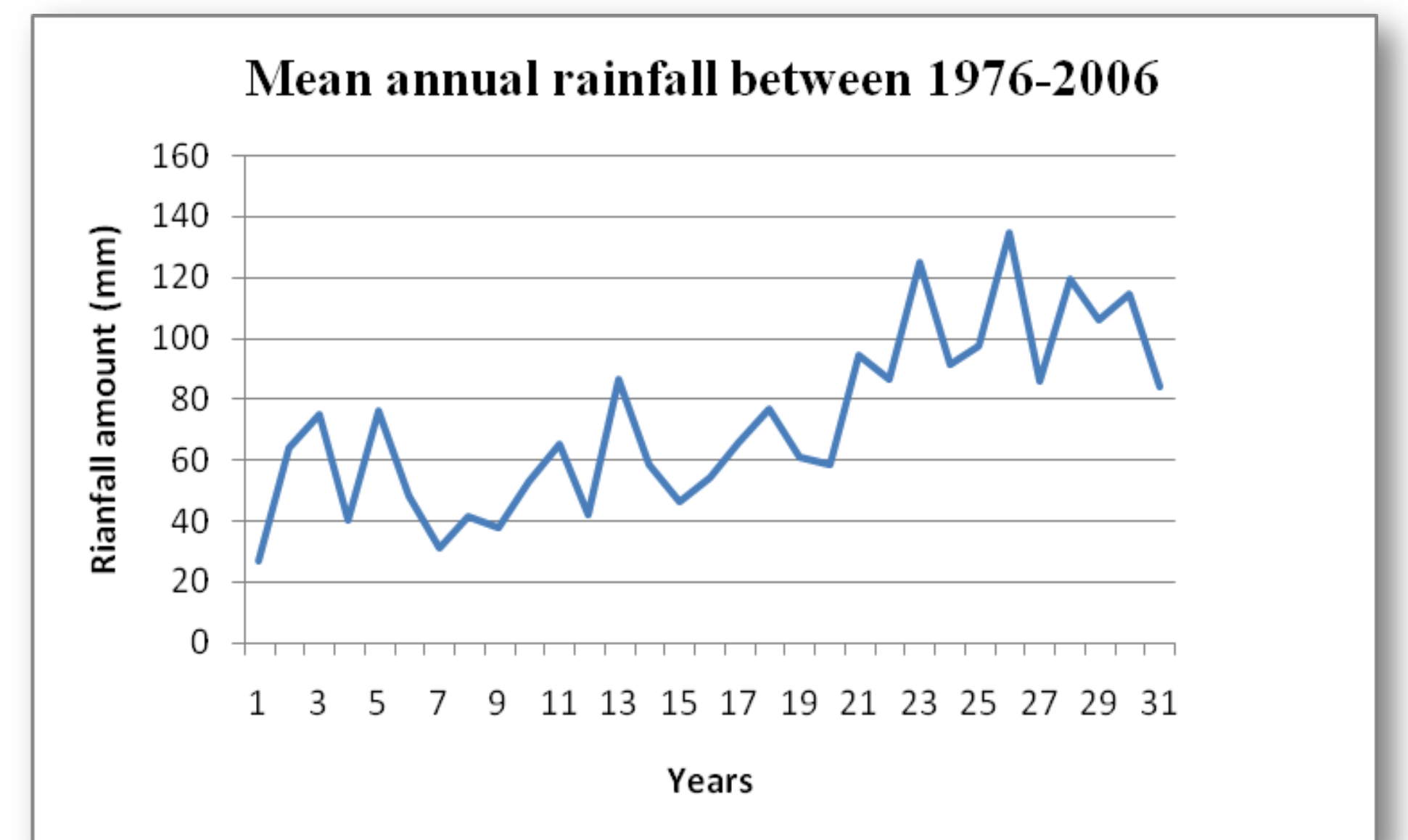
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STUDY AREA

Kano metropolis is one of the nerve centres of Sudano Sahelian belt of Nigeria with a population of approximately 9,383,682. It is located between latitudes 12° 25'N and 12°40'N and longitude 8° 35' E and 8° 45' E. Temperatures rise as high as 38°C during the rainy season and on the average it is about 13°C in the harmattan season. Monthly rainfall ranges between 0.0 to 732mm, sunshine hours are longer in March and October; and wind speed highest in May/June. The topography of Kano is generally flat and it lies approximately 481m above mean sea level with underlying geology of basement complex rocks. The hydrology is predominantly made up of surface water with a number of dams dotting the outskirts of the town. The soils are typically ferruginous and nurturing Sudan savanna type vegetation. Land use is mainly urban and agricultural type. See map below.



AIM AND OBJECTIVES

The study critically assesses the negative impact (s) that the changing climate is having on the inhabitants of this rapidly growing city that follows an unplanned pattern of expansion. The objectives are to assess the urban land use change using remote sensing images acquired in 1975 and 2000), statistically analyze rainfall and temperature data (1976 – 2006) and examine the extent the changing climate has affected the populace.

Figure below shows a map of Nigeria showing Kano



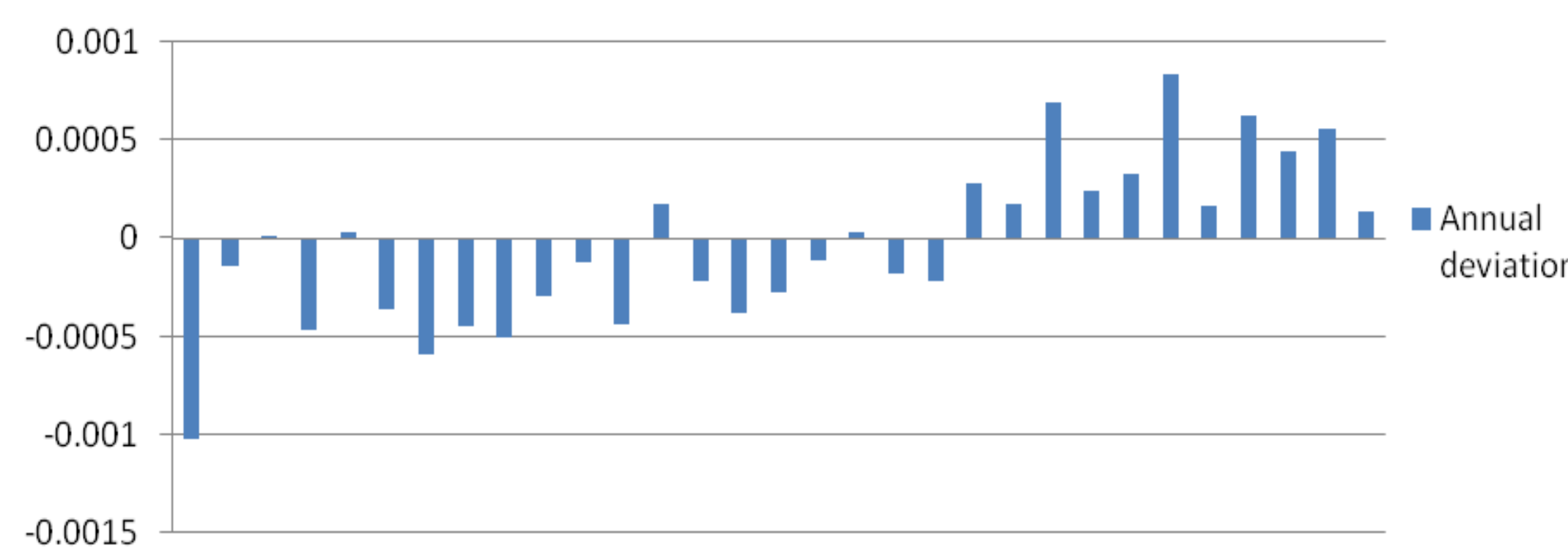
RESULTS

It was observed that variation in rainfall was inconsistent during the period of study with the highest value recorded in 1999. In addition the highest values occurred between 1998 and 2004, a period of frequent flood occurrence to indicate higher than normal rainfall in a more exposed landscape due to urban growth. The highest temperature value was 39°C and this was recorded in 2004 . Central Kano was generally warmer than areas in the periphery such as sub-urbs like Mariri and the international airport. Pearson Moment Correlation was used to study the correlation between the rainfall and temperature values and a correlation of 0.9 was obtained. Between 1976 and 1996, negative deviation of rainfall from the mean was prevalent, indicating lower than normal rainfall. This coincided with drought periods of the Sahalian belt.

CONCLUSION

Despite the fact that this study is ongoing, the preliminary results show that climate change is a major issue in Kano. Aside from the fact that the rapid expansion of the metropolis has reduced the cooling effect of vegetation on the inhabitants, there have been growing cases of heat related diseases like cerebrospinal meningitis and malaria; dust from the sahara has also increased the number of respiratory ailments such as asthma. Its is the intention of the research persons to collect more climate data and current satellite images in order to obtain a more comprehensive result depicting current situation in the study area.

Percentage deviation for rainfall for 1976 - 2006



Satellite image analysis showed that between 1975 and 2000, total change in settlement was approximately 90%, and vegetation was destroyed to accommodate this growth with the consequent exposure of the surface.

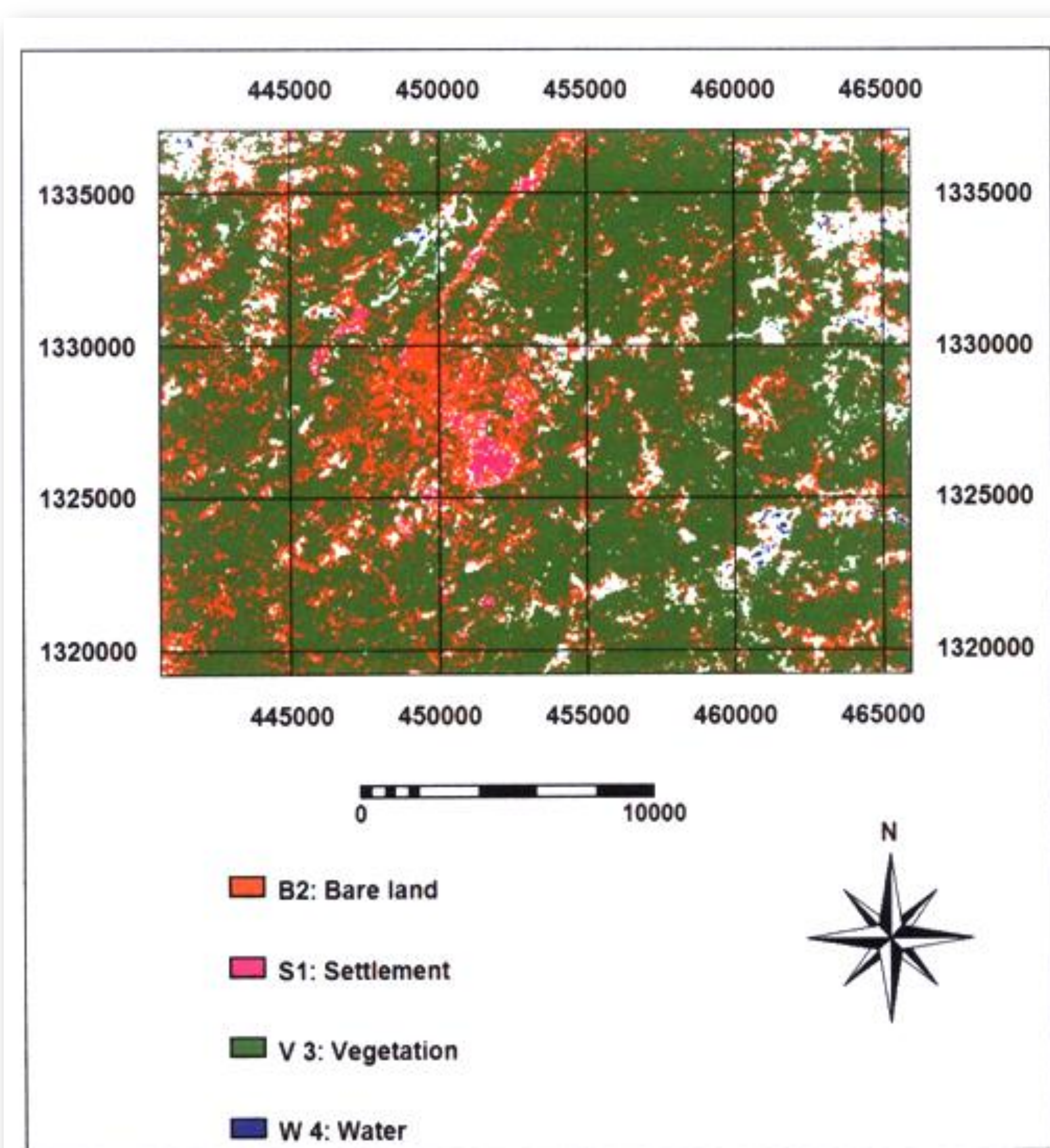


Fig.4.4 A supervised Classified 1975 Landsat MSS Showing Land Cover Categories (Land Use Change). Acquired 5th December 1975.

ACKNOWLEDGEMENT

The authors wish to acknowledge the source of data used: Nigeria Meteorological Agency and Global Land Cover Facility (Landsat Geocover). In addition, the organizers of the congress are acknowledged for sponsoring the participation of the co-author of this presentation.

* Sanni, D. O. has just graduated with a Bachelor of Technology in Geography and Remote Sensing Applications and is undergoing the mandatory service year, while **Dr Okhimamhe is the Director, Centre for Climate Change and freshwater Resources (CCCFR) in the same University.

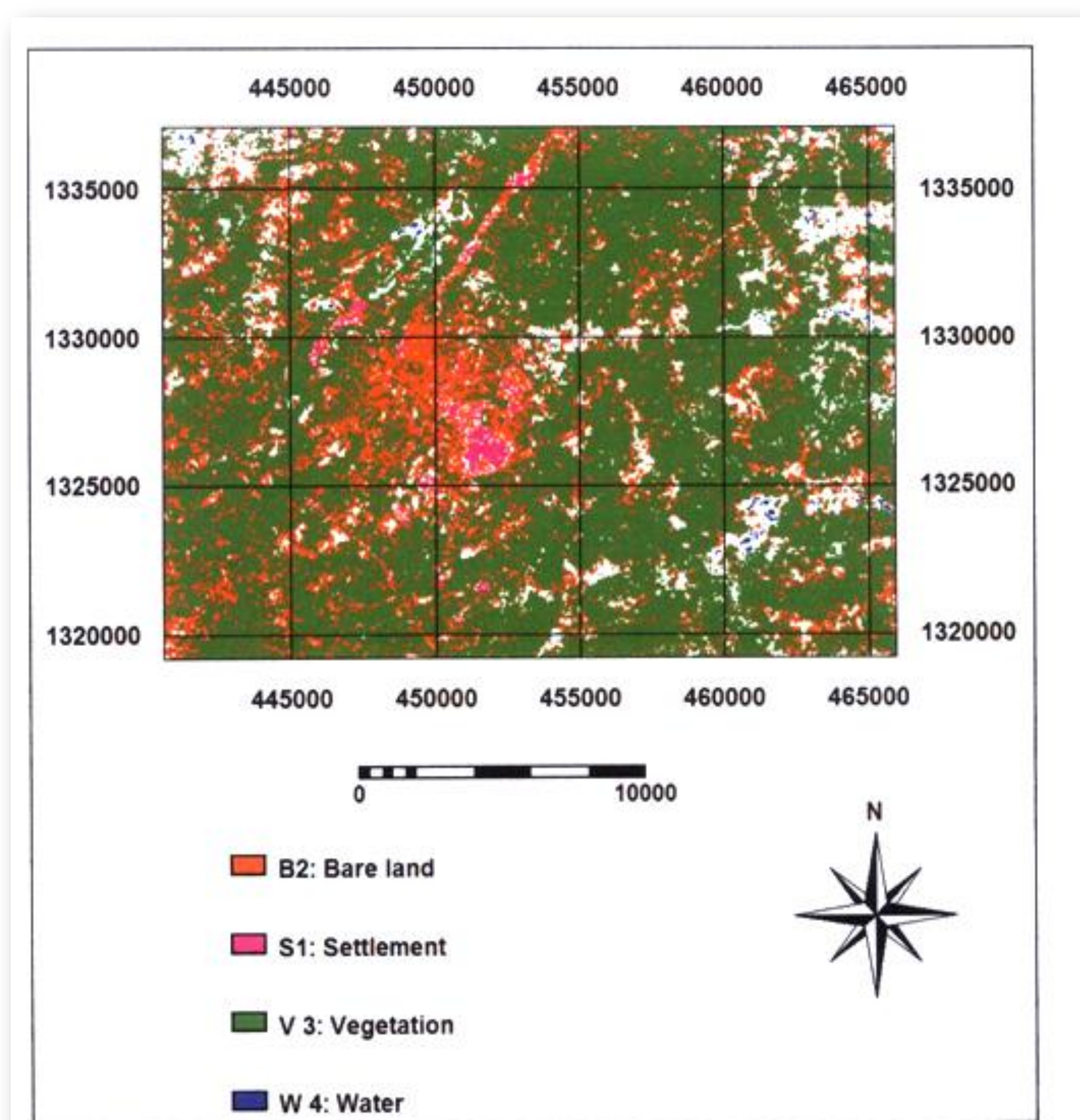


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