Prediction Of Urban Expansion In The Upper Shama Area Using Artificial Neural Networks

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SUMMARY

Urban expansion is of major concern to many disciplines in the world, especially climate change activists. Urban expansion results in the physical extension of the geographical footprints/features of towns sometimes as a result of an increase in population thus leading to Land Use/Land Cover changes in such areas. As the population and infrastructure increase, they pose a lot of threats to the environment and make handling spatial data very difficult. Therefore, this study aims to monitor urban expansion and predict urban expansion for the study area for the year 2030. The Upper Shama Area (USA) was selected as the study area because its growth over the years has been consistent and alarming. In this study, Supervised Classification in ArcGIS was used to determine the urban expansion for the Upper Shama Area. The results showed that in 2000, 9.8 % of the study area was urbanised. Further determination showed that in 2010, 27.7% of the Upper Shama Area was urbanised. In 2020, 62.7 % of the study area was urbanised. Additionally, Artificial Neural Network was used to predict urban expansion for 2030. The predicted map of 2030 revealed that 91.0 % of the Upper Shama Area would be urbanised. This rapid growth is caused by an improved road network, affordable land and good land security. This could result in a negative environmental impact and increase pressure on social amenities, hence this paper is relevant to state institutions for planning the USA to avoid urban sprawls and other negative vices.